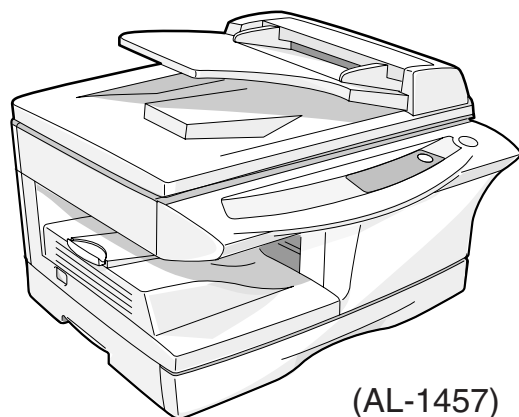


SHARP SERVICE MANUAL

CODE : 00ZAL1457/A1E



DIGITAL LASER COPIER/ DIGITAL MULTIFUNCTIONAL SYSTEM

AL-1217
MODEL AL-1457

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Parts marked with “△” are important for maintaining the safety of the machine. Be sure to replace these parts with the replacement parts specified to maintain the safety and performance of the machine.

SHARP CORPORATION

This document has been published to be used
for after sales service only.
The contents are subject to change without notice.

CAUTION

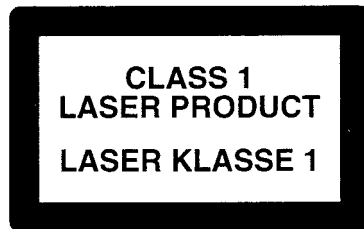
This product is a class 1 laser product that complies with 21CFR 1040 of the CDRH standard and IEC825. This means that this machine does not produce hazardous laser radiation. The use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This laser radiation is not a danger to the skin, but when an exact focusing of the laser beam is achieved on the eye's retina, there is the danger of spot damage to the retina.

The following cautions must be observed to avoid exposure of the laser beam to your eyes at the time of servicing.

- 1) When a problem in the laser optical unit has occurred, the whole optical unit must be exchanged as a unit, not as individual parts.
- 2) Do not look into the machine with the main switch turned on after removing the developer unit, toner cartridge, and drum cartridge.
- 3) Do not look into the laser beam exposure slit of the laser optical unit with the connector connected when removing and installing the optical system.
- 4) The middle frame contains the safety interlock switch.

Do not defeat the safety interlock by inserting wedges or other items into the switch slot.



LASER WAVE – LENGTH : 770 ~ 795nm
Pulse times : 11.82μs/7mm
Out put power : 0.17mW ± 0.01mW

CAUTION

INVISIBLE LASER RADIATION,
WHEN OPEN AND INTERLOCKS DEFEATED.
AVOID EXPOSURE TO BEAM.

VORSICHT

UNSICHTBARE LASERSTRAHLUNG,
WENN ABDECKUNG GEÖFFNET UND
SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT.
NICHT DEM STRAHL AUSSETZEN.

VARO !

AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE ÄLÄ
KATSO SÄTEESEEN.

ADVARSEL

USYNLIG LASERSTRÅLNING VED ÅBNING, NÅR
SIKKERHEDSBRYDERE ER UDE AF
FUNKTION. UNDGÅ UDSAETTELSE FOR
STRÅLNING.


VARNING !

OSYNLIG LASERSTRÅLNING NÅR DENNA DEL
ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
BETRAKTA EJ STRÅLEN. – STRÅLEN ÄR
FARLIG.

At the production line, the output power of the scanner unit is adjusted to 0.57 MILLI-WATT PLUS 20 PCTS and is maintained constant by the operation of the Automatic Power Control (APC). Even if the APC circuit fails in operation for some reason, the maximum output power will only be 15 MILLI-WATT 0.1 MICRO-SEC. Giving and accessible emission level of 42 MICRO-WATT which is still-less than the limit of CLASS-1 laser product.

Caution

This product contains a low power laser device. To ensure continued safety do not remove any cover or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.



Laserstrahl

CAUTION INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.

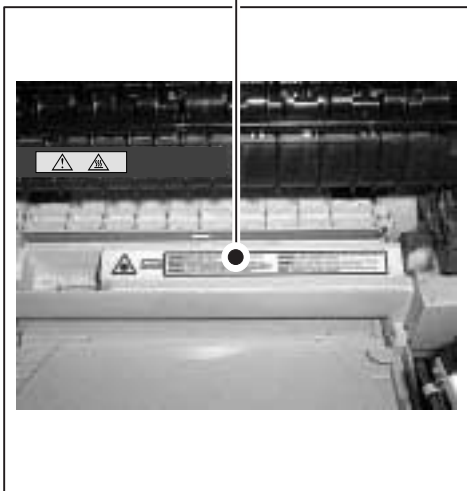
VORSICHT UNSICHTBARE LASERSTRABUNG WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERERÜCKT. NICHT DEM STRAHN AUSSETZEN.

ADVARSEL USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

ADVERSEL USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.


VARNING OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRRAR ÄR URKOPPLADE. STRÅLEN ÄR FARLIG. BETRÄKTA EJ STRÅLEN.


VARO! AVATTAESSA JA SUJALUKITUS CHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.



Caution label on the unit

The label ( ) in the fusing area of the unit indicates the following:

 : Caution, risk of danger

 : Caution, hot surface



VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTÖMÄLLE LASERSÄTEILYLLE.

VARNING - OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

**CLASS 1
LASER PRODUCT
LASER KLASSE 1**

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

The foregoing is applicable only to the 220V model, 230V model and 240V model.

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[1] GENERAL

1. Major functions

Configurations

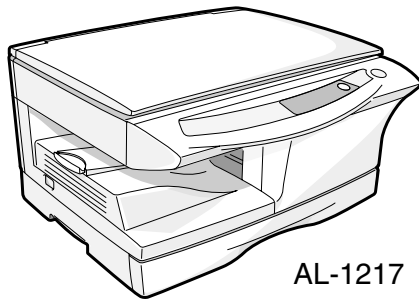
| Item Model | CPM | SB/MB | 2 Tray | SPF | R-SPF | Color Scanner | GDI printer | PCL printer | SOPM | Duplex | Memory | FAX |
|---------------|-------|-------|--------|-----|-------|------------------|----------------|----------------|------|--------|--------|-----|
| AL-1217 | 12CPM | SB | × | × | × | ○ | ○ | × | ○ | × | 8M | × |
| AL-1457 | 14CPM | MB | × | ○ | × | ○ | ○ | × | ○ | × | 8M | × |

Descriptions of items

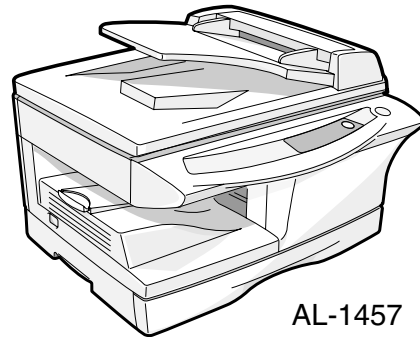
| | |
|----------------|-------------------------------------------------------------------|
| CPM: | Copy speed (Copies Per Minute) |
| SB/MB: | SB = Manual feed single bypass, MB = Manual feed multi bypass |
| 2 tray: | Second cassette unit. |
| SPF: | Original feed unit |
| R-SPF: | Duplex original feed unit |
| Color scanner: | Color scanner function |
| GDI printer: | GDI printer function with USB. |
| PCL printer: | PCL printer function with USB. |
| SOPM: | Scan Once Print Many function (Many copies are made by one scan.) |
| Duplex: | Auto duplex copy function |
| Memory: | Standard page memory |
| FAX: | FAX function. |

Descriptions of table

- : Standard provision
- ×: No function or no option available



AL-1217



AL-1457

[2] SPECIFICATIONS

1. Basic Specifications

| | | | |
|---------------------------|---------|-------------------------------------------------------------|---------------------------------|
| Item | | | |
| Type | | Desktop | |
| Copy system | | Dry, electrostatic | |
| Segment (class) | | Digital personal copier | |
| Copier dimensions | AL-1217 | 20.4"(W)X18.2"(D)X11.6"(H) (518mm(W)X462.5mm(D)X295.6mm(H)) | |
| | AL-1457 | 20.4"(W)X19.4"(D)X15.0"(H) (518mm(W)X492.5mm(D)X380.4mm(H)) | |
| Weight (Approximately) | AL-1217 | 35.3lbs.(17Kg) | TD and drum cartridges included |
| | AL-1457 | 41.9lbs.(20Kg) | |

2. Operation specifications

| Section, item | | | Details | |
|--------------------|-------------------|----------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Paper feed section | Paper feed system | | AL-1217 | 1 tray (250 sheet) + single bypass |
| | | | AL-1457 | 1 tray (250 sheet) + multi bypass (50 sheet) |
| | AB system | Tray paper feed section | Paper size | A4, B5, A5 (Landscape) |
| | | | Paper weight | 56 - 80g/m ² (15 - 21 lbs.) |
| | | | Paper feed capacity | 250 sheets |
| | | | Kinds | Standard paper, specified paper, recycled paper |
| | | | Remark | User adjustment of paper guide available |
| | | | | |
| | | Multi bypass paper feed section | Paper size | A4, B5, A5, B6, A6 (Landscape) |
| | | | Paper weight | 52 - 128g/m ² (14 - 34.5 lbs.) |
| | | | Paper feed capacity | 50 sheets |
| | | | Kinds | Standard paper, specified paper, recycled paper, OHP, Label, Envelop (Single copy) |
| | | | Remark | User adjustment of paper guide available |
| | | | | |
| | | Single bypass paper feed section | Paper size | A4, B5, A5, B6, A6 (Landscape) |
| | | | Paper weight | 52 - 128g/m ² (14 - 34.5 lbs.) |
| | | | Paper feed capacity | 1 sheet |
| | | | Kinds | Standard paper, specified paper, recycled paper, OHP, Label, Postal card, Envelop, Post card (Including double postal without fold line) |
| | | | Remark | User adjustment of paper guide available |
| | | | | |
| | Inch system | Tray paper feed section | Paper size | 8-1/2" x 14", 8-1/2 x 11", 8-1/2" x 5-1/2" (Landscape) |
| | | | Paper weight | 15 - 21 lbs. |
| | | | Paper feed capacity | 250 sheets |
| | | | Kinds | Standard paper, specified paper, recycled paper |
| | | | Remark | User adjustment of paper guide available |
| | | Multi bypass paper feed section | Paper size | 8-1/2" x 14", 8-1/2 x 11", 8-1/2" x 5-1/2", 3-1/2" x 5-1/2" (Landscape) |
| | | | Paper weight | 14 - 34.5 lbs. |
| | | | Paper feed capacity | 50 sheets |
| | | | Kinds | Standard paper, specified paper, recycled paper, OHP, Label, Envelop (Single copy) |
| | | | Remark | User adjustment of paper guide available |
| | | Single bypass paper feed section | Paper size | 8-1/2" x 14", 8-1/2 x 11", 8-1/2" x 5-1/2" (Landscape) |
| | | | Paper weight | 14 - 34.5 lbs. |
| | | | Paper feed capacity | 1 sheet |
| | | | Kinds | Standard paper, specified paper, recycled paper, OHP, Label, Envelop |
| Remark | | | User adjustment of paper guide available | |
| | | | | |
| Paper exit section | | Exit way | | Face down |
| | | Capacity of output tray | | 100 sheets |
| Originals | | Original set | | Center Registration (left edge) |
| | | Max. original size | | A4 (8-1/2" x 14") |
| | | Original kinds | | sheet, book |
| | | Original size detection | | None |

| Section, item | | Details | | | |
|--------------------------|------------------|--------------------------------------------|-----------------------------------------------------|------------------------------------------------------------|--------------|
| Optical section | Scanning section | Scanning system | 3 CCDs (RGB) sensor scanning by lighting white lamp | | |
| | | CCD sensor | Resolution | 600 dpi | |
| | | Lighting lamp | Type | CCFL | |
| | | | Voltage | 560Vrms | |
| | | | Power consumption | 2.8W | |
| | Output data | R, G, B 1 or 8 bits/pixel / A/D 16bit | | | |
| | Writing section | Writing system | Writing to OPC drum by the semiconductor laser | | |
| Laser unit | | Resolution | 600 dpi | | |
| Image forming | | Photoconductor | type | OPC (30ø) | |
| | | | Life | 18k | |
| | | Charger | Charging system | Saw -tooth charging with a grid, / (-) scorotron discharge | |
| | | | Transfer system | (+) DC scorotron system | |
| | | | Separation system | (-) DC scorotron system | |
| | | Developing | Developing system | Dry, 2-component magnetic brush development system | |
| | | Cleaning | Cleaning system | Counter blade system (Counter to rotation) | |
| Fusing section | | Fusing system | Heat roller system | | |
| | | Upper heat roller | type | Teflon roller | |
| | | Lower heat roller | type | Silicon rubber roller | |
| | | Heater lamp | type | Halogen lamp | |
| | | | Voltage | 230V | |
| | | | Power consumption | 800W | |
| Electrical section | | Power source | Voltage | 100V, 110V, 120/127V, 230V, 240V | |
| | | | Frequency | Common use for 50 and 60Hz | |
| | | Power consumption | Max. | Less than 1000W | |
| | | | Average (during copying) | AL-1217 | 300 Wh/H *1) |
| | | | | AL-1457 | 300 Wh/H *1) |
| | | | Average (stand-by) | ~ 127V 80Wh/H *1), 230V, 240V 75Wh/H *1) | |
| | | | Pre-heat mode | ~ 127V 16.5Wh/H *1), 230V, 240V 18Wh/H *1) | |
| Auto power shut-off mode | | ~ 127V 3.7Wh/H *1), 230V, 240V 4.5Wh/H *1) | | | |

*1) May fluctuate due to environmental conditions and the input voltage.

3. Copy performance

| Section, item | | Details | AL-1217 | AL-1457 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Copy magnification | Fixed magnification ratios | | 3 Reduction + 2 Enlargement (AB system : 25, 70, 86, 100, 141, 400%) (Inch system : 25, 64, 78, 100, 129, 400%) | |
| | Zooming magnification ratios | | 25 - 400% (376 steps in 1% increments) | |
| Manual steps (manual, photo) | | | 5 steps | |
| Copy speed | First copy time | Tray paper feed | 9.6 sec. (Pre-heat mode:25 sec. / Auto power-shut-off mode : 40 sec.) A4 or Letter/100%/Auto Exposure | |
| <div>AB system A4 (Landscape)</div> <div>AB system B5 (Landscape)</div> <div>Inch system 8-1/2" x 14" (Landscape)</div> <div>Inch system 8-1/2" x 11" (Landscape)</div> | Copy speed (CPM) | Same size | 12 | 14 |
| | | Enlargement | 12 | 14 |
| | | Reduction | 12 | 14 |
| | Copy speed (CPM) | Same size | 12 | 14 |
| | | Enlargement | 12 | 14 |
| | | Reduction | 12 | 14 |
| | Copy speed (CPM) | Same size | 12 | 14 |
| | | Enlargement | 12 | 14 |
| | | Reduction | 12 | 14 |
| | Copy speed (CPM) | Same size | 12 | 14 |
| | | Enlargement | 12 | 14 |
| | | Reduction | 12 | 14 |
| Max. continuous copy quantity | | | 99 | |
| Void | Void area | leading edge | 1 - 4mm | |
| | | Trailing edge | 4mm or less, 6mm or less (Duplex copying/both image) | |
| | | Side edge void area | 0.5mm or more (per side) 4.5mm or less (total of both sides) | |
| | Image loss | leading edge | same size: 3.0mm or less (OC) / 4mm or less (SPF/R-SPF/Duplex) Enlarge: 2mm or less (OC) / 3mm or less (SPF/R-SPF/Duplex) Reduction (50%): 6.0mm or less (OC) / 8mm or less (SPF/R-SPF/Duplex) | |
| | | | | |
| Warm-up time | | | 0 sec. | |
| Power save mode reset time | | | 0 sec. | |
| Paper jam recovery time | | | 0 sec. | |

4. GDI Printer

| | |
|------------------|-----------------------------------------------------------------------------------|
| Print speed | Max. 12ppm (A4, 8.5" x 11") (Mono CW chart / Pentium III 733Mhz / 128MB / Win 98) |
| First print time | 9.6 sec. (without data transfer time) |
| Duplex | Yes |
| CPU | None |
| Memory | 8MB (Duplex model: 16MB) |
| Interface | IEEE1284 / USB 1.1 |
| Emulation | GDI |
| Resolution | 600dpi *1 |
| Supported OS | Win 95 / 98 / Me / NT 4.0 / 2000 / XP |
| WHQL support | Yes *2 |

*1: Engine Resolution

*2: By running change

5. Scan function

| | |
|-----------------|----------------------------------------------------------------------------------------------|
| Type | Flat Bed Color Scanner |
| Scanning system | Original table/SPF/RSPF (Valid only in the single mode) |
| Light source | 3 CCDs (RGB) sensor scanning by lighting white lamp (2 pcs of CCFL) |
| Resolution | Optical: 600 x 1200dpi Setting range: 50 - 9600dpi (Preview resolution is fixed at 75dpi) |
| Originals | Sheet type / Book type |
| Output data | R, G, B 1 or 8 bits/pixel / A/D 16bit |
| Scan range | OC / SPF: 8.52 (H) x 14.72 (V)" Original position: Left Center |
| Scan speed | OC / SPF: Max. 2.88ms/line (Color/Gray scale), Max. 0.96 ms/line (B & W) |
| Protocol | TWAIN / WIA (Only XP)* / STI |
| Interface | USB1.1 |
| Scanner utility | Button Manager / Sharpdesk / Composer |
| Scan key/lamp | Yes |
| Duplex scan | No |
| Supported OS | Win 98 / Me / 2000 / XP |
| Void area | No (User settable by PC) |
| WHQL supported | Yes * |

* Since only XP is subject to WHQL, XP will be supported to obtain WHQL.

6. SPF

| | |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Original capacity | 30 sheets (52 to 90g/m ²)(14 to 23.9 lbs.) |
| Original size | A4 to A5/10" x 14" to 5-1/2" x 8-1/2" |
| Original replacement speed | 12CPM(A4/8-1/2" x 11"Landscape)(15CPM model) |
| Original placement | Face up |
| Original weight | 52 to 90g/m ² (14 - 23.9lbs.) |
| Mixed feeding(Paper size) | Performance Degraded |
| Original which cannot | Thermal papers, originals with punch holes for files, be used folded paper, transparent originals such as OHP films, stapled or clip used originals with cover up liquid used, Originals with tape sealed, originals with high level frictional coefficient such as photos or catalogs. |

[3] CONSUMABLE PARTS

1. Supply system table

Common to all destinations

| No. | Name | Content | Life | Product name | Package |
|-----|-------------------------------|----------------------------------------------------------------------------------------|---------------------|--------------|---------|
| 1 | Develop cartridge (Black) x 1 | Toner/developer cartridge x 1 (Toner: Net weight 124g) (Developer: Net weight 190g) | 4K (5% document) | AL-110DC | 5 |
| 2 | Drum cartridge | Drum cartridge | 18K | AL-100DR | 5 |

2. Environmental

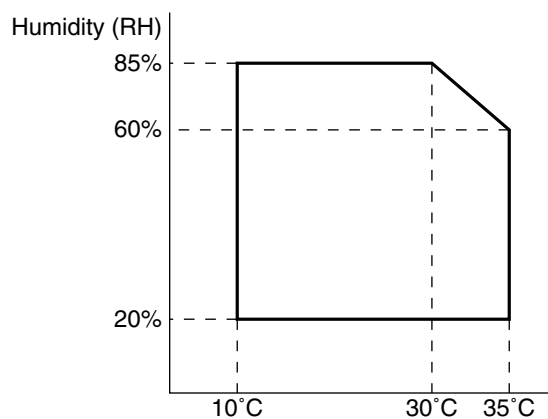
The environmental conditions for assuring the copy quality and the machine operations are as follows:

(1) Normal operating condition

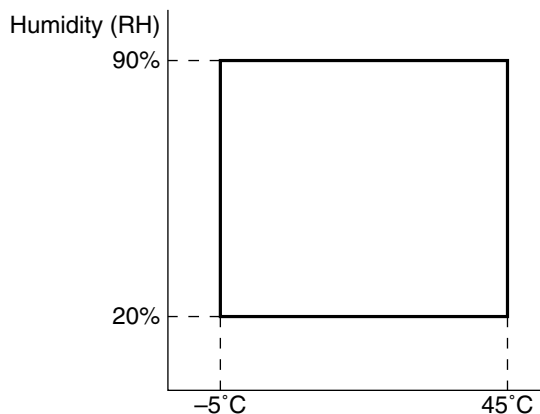
Temperature: 20 - 25°C

Humidity: 65 ± 5%RH

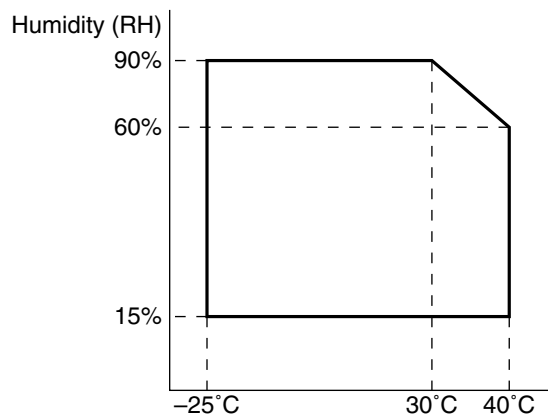
(2) Acceptable operating condition



(4) Supply storage condition

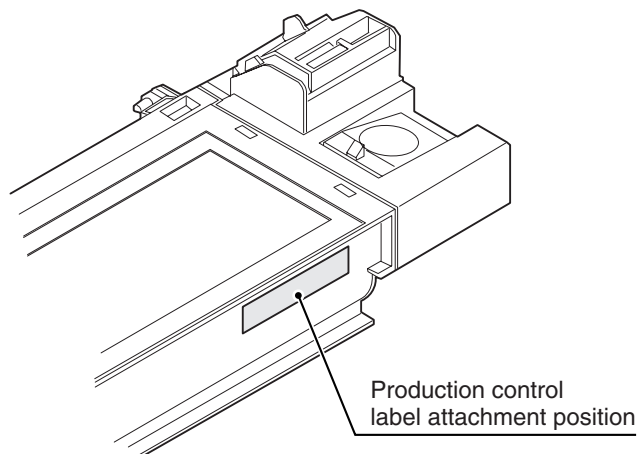
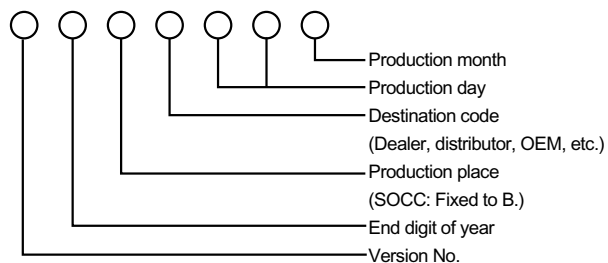


(3) Optical condition



3. Production control number (lot No.) identification

<Developing cartridge>

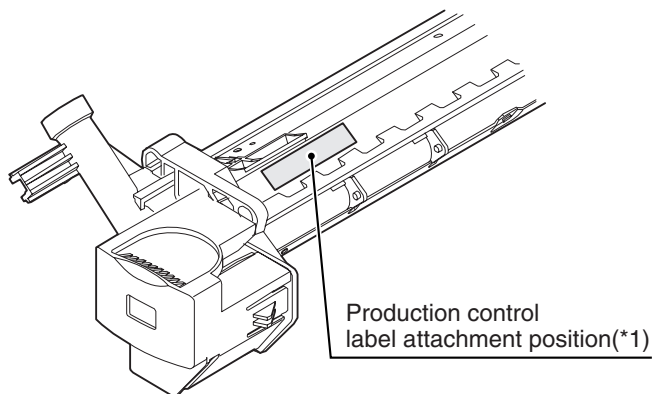
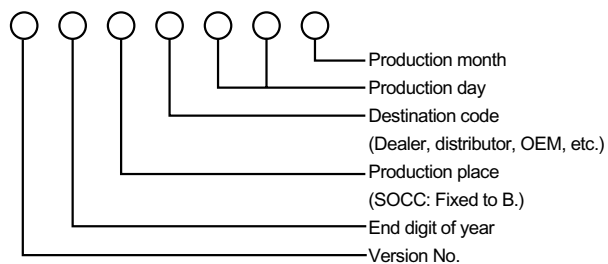


* Destination

| Division | | No. |
|--------------------|-------------|-----|
| EX Destination | A same pack | G |
| | B same pack | H |
| Option Destination | A | P |
| | B | Q |

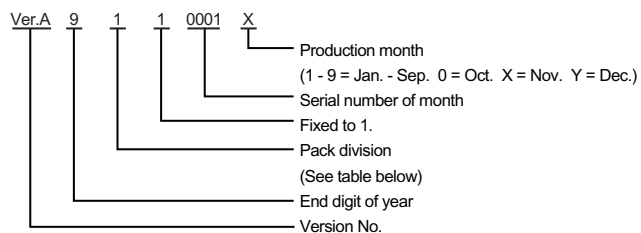
<Drum cartridge>

The label on the drum cartridge shows the date of production.
 (SOCC production)



*1 The production control label is not attached to the cartridge of a China product.

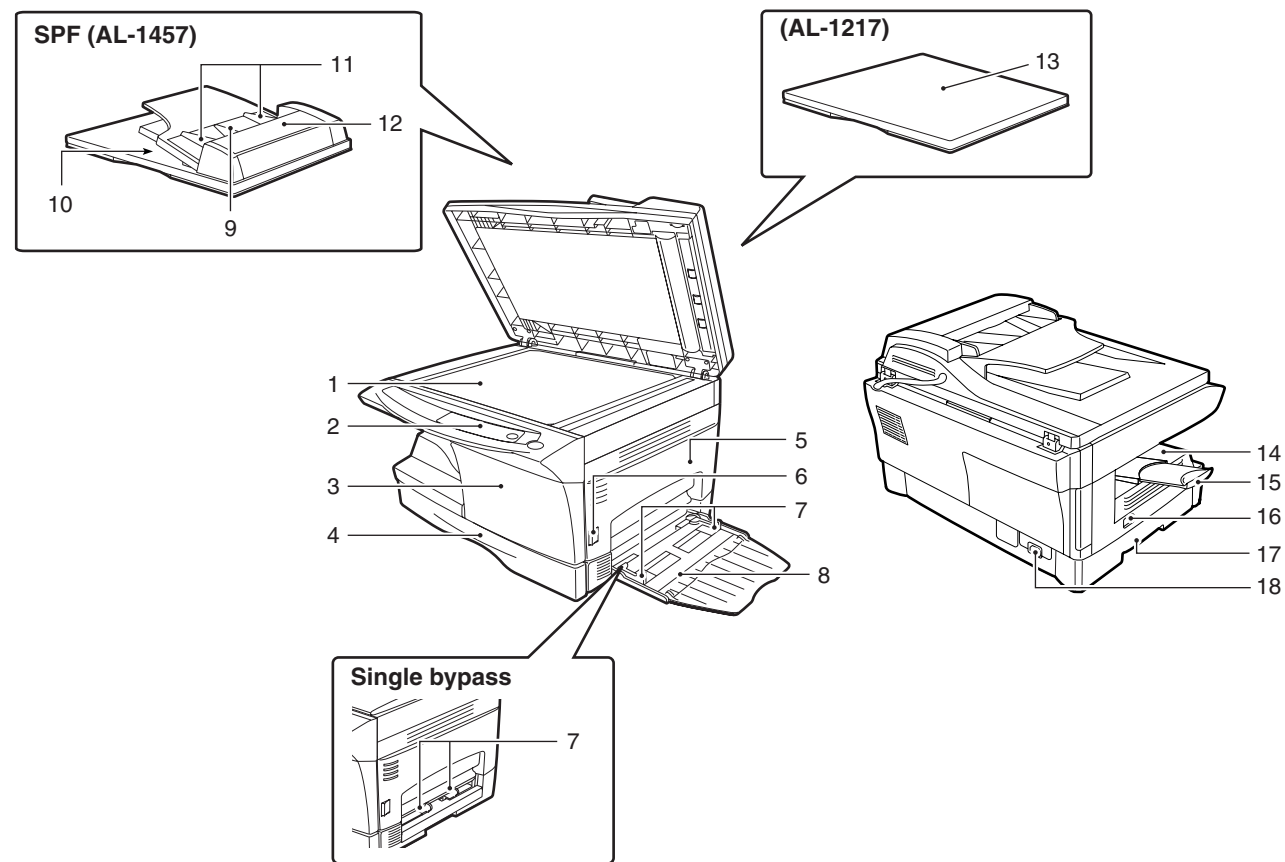
<JAPAN production>



| Division | No. |
|---------------|-----|
| Ex production | 1 |
| Option | 2 |
| Same pack | 3 |

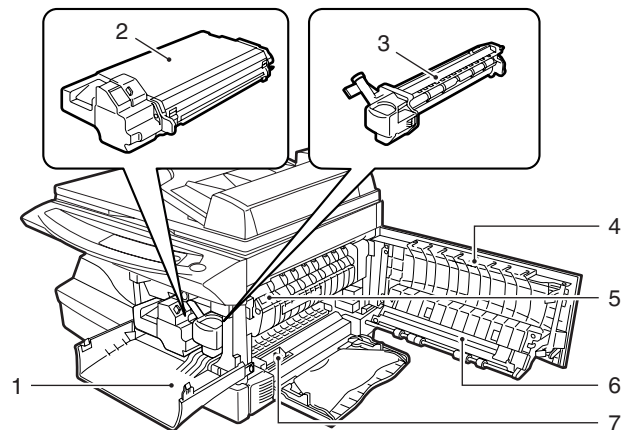
[4] EXTERNAL VIEWS AND INTERNAL STRUCTURES

1. Appearance



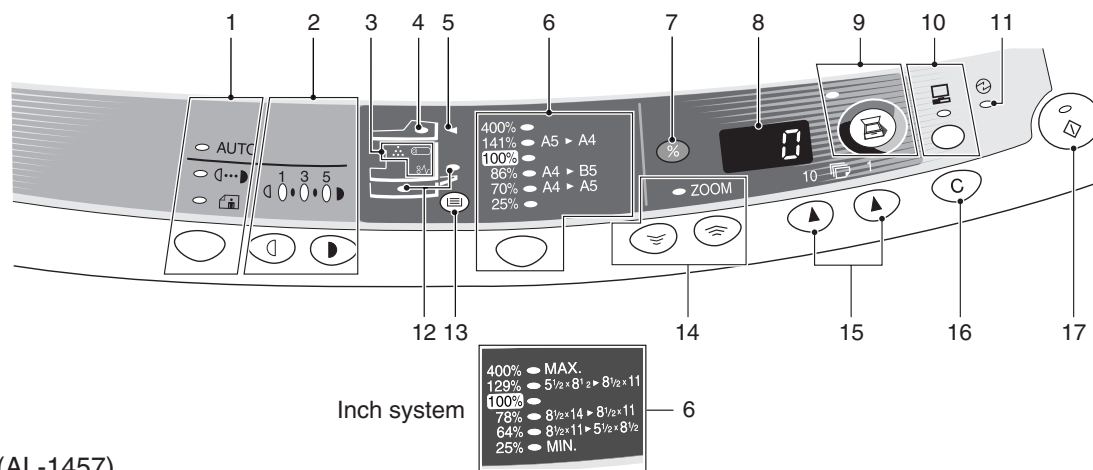
| | | | | | |
|----|---------------------|----|-------------------|----|-----------------------------|
| 1 | Original table | 2 | Operation panel | 3 | Front cover |
| 4 | Paper tray | 5 | Side cover | 6 | Side cover open button |
| 7 | Bypass paper guides | 8 | Multi-bypass tray | 9 | Document feeder tray |
| 10 | SPF exit area | 11 | Original guides | 12 | Feeding roller cover |
| 13 | Original cover | 14 | Paper output tray | 15 | Paper output tray extension |
| 16 | Power switch | 17 | Handle | 18 | Power cord socket |

2. Internal



| | | | | | |
|---|-----------------|---|---------------------------|---|------------------|
| 1 | Front cover | 2 | TD cartridge | 3 | Drum cartridge |
| 4 | Side cover | 5 | Fusing unit release lever | 6 | Transfer charger |
| 7 | Charger cleaner | | | | |

3. Operation panel



| | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Exposure mode selector key and indicators Use to sequentially select the exposure modes: AUTO, MANUAL or PHOTO. Selected mode is shown by a lit indicator. | 2 | Light and dark keys and exposure indicators Use to adjust the MANUAL or PHOTO exposure level. Selected exposure level is shown by a lit indicator. Use to start and terminate user program setting. |
| 3 | Alarm indicators <ul style="list-style-type: none"> ☉ Drum replacement required indicator *1 8V Misfeed indicator ⋯ TD cartridge replacement required indicator *2 | 4 | SPF indicator (AL-1457) |
| 5 | SPF misfeed indicator (AL-1457) | 6 | Copy ratio selector key and copy ratio indicators Use to sequentially select preset reduction/enlargement copy ratios. Selected copy ratio is shown by a lit indicator. |
| 7 | Copy ratio display (%) key | 8 | Display Displays the specified copy quantity, zoom copy ratio, user program code, and error code. |
| 9 | SCANNER key and indicator *3, *4 | 10 | ONLINE key / indicator Lights up when the machine is used as a printer and scanner. *3 |
| 11 | Power save indicator Lights up when the copier is in a power save mode. | 12 | Paper feed location indicators Light up to show the selected paper feed station. |
| 13 | Tray select key (AL-1457) Use to select a paper feed station (paper tray or bypass tray). | 14 | Zoom keys / indicator Use to select any reduction or enlargement copy ratio from 25% to 400% in 1% increments. |
| 15 | Copy quantity keys <ul style="list-style-type: none"> Use to select the desired copy quantity (1 to 99). Use to make user program entries. | 16 | Clear key <ul style="list-style-type: none"> Press to clear the display, or press during a copy run to terminate copying. Press and hold down during standby to display the total number of copies made to date. |
| 17 | Print key and ready indicator <ul style="list-style-type: none"> Copying is possible when the indicator is on. Use to set a user program. Press to start copying | | |

*1. Photoreceptor Cartridge Replacement indicator

After making 17,000 copies, the indicator will be "ON", and after 1,000 copier more are made, the indicator starts blinking and machine will hard-stop (after current job) until a new cartridge is installed. End life of photoreceptor cartridge displays 3-digits x 2-line (total 6-digits) by pressing CLEAR key for five seconds in user simulation.

*2. Toner Developer Cartridge Replacement

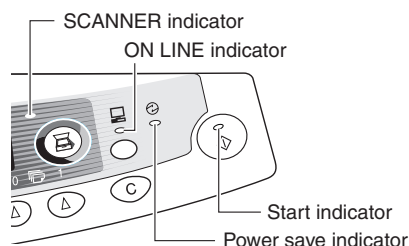
When toner density is lower than a specified level, the TONER DEVELOPER CARTRIDGE REPLACEMENT indicator lights up to warn the user. If the Toner Developer Cartridge is not replaced in that time, the Ready Lamp changes to blinking and then start to supply the toner after around 10 copies. (Cartridge replacement lamp continues to light.) If toner density is not back to specific level after two minutes, the READY indicator goes out and Toner Developer indicator starts blinking, and the copier stops.

*3. Indicators on the operation panel

The ON LINE indicator and the start (Ⓢ) indicator indicate the state of the printer or scanner.

Start indicator

- On: Indicates the unit is ready for copying or scanning is being performed.
- Blinking: Indicates that an interrupt print job is in progress, or that the unit is initializing (the cover has been opened and closed or the power turned off and on).
- Off: Indicates copying or scanning is being performed or the unit is in the auto power shut-off mode.



ON LINE indicator

The ON LINE key is pressed and on line and off line are changed.

- On: Indicates the unit is ready for printing or scanning is being performed. (On line)
- Blinking: Printing or data is being received from a computer.
- Off: Copying is being performed. (Off line)

Power save indicator

- On: Indicates the unit is in a power save mode.

Scanner indicator

- On: The SCANNER (Ⓢ) key has been pressed and the unit is in scanner mode.
- Blinking: A scan job is being executed from the computer, or scan data is stored in the unit's memory.
- Off: The unit is in the copy mode.

*4. Using the SCANNER key to begin scanning

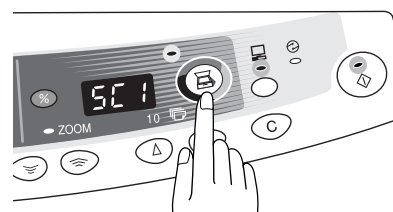
This scanning method can only be used if the Button Manager has been installed using the installer. To scan using this method, you must first complete the settings in Button Manager in your computer. For more information on Button Manager, see the online manual or the help file for Button Manager.

Note:

- Scanning is not possible during a copy job.
- If the unit is used to begin a scan job during a print job using the parallel interface connection or the USB interface connection, the scan job will be stored and scanning will begin when the print job is completed.
- When scanning an original that has been placed in the SPF/ RSPF, only one original can be placed unless you are using Sharpdesk.

- 1) Press the SCANNER (Ⓢ) key.

The unit enters scan mode.

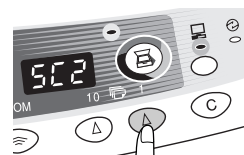


- 2) Place the original you wish to scan on the original table/SPF/ RSPF.

For the procedure for placing the original, see "ORIGINAL PLACEMENT".

- 3) Press the right copy quantity key to display the number of the application that you wish to use for scanning.

The application numbers are initially as follows.



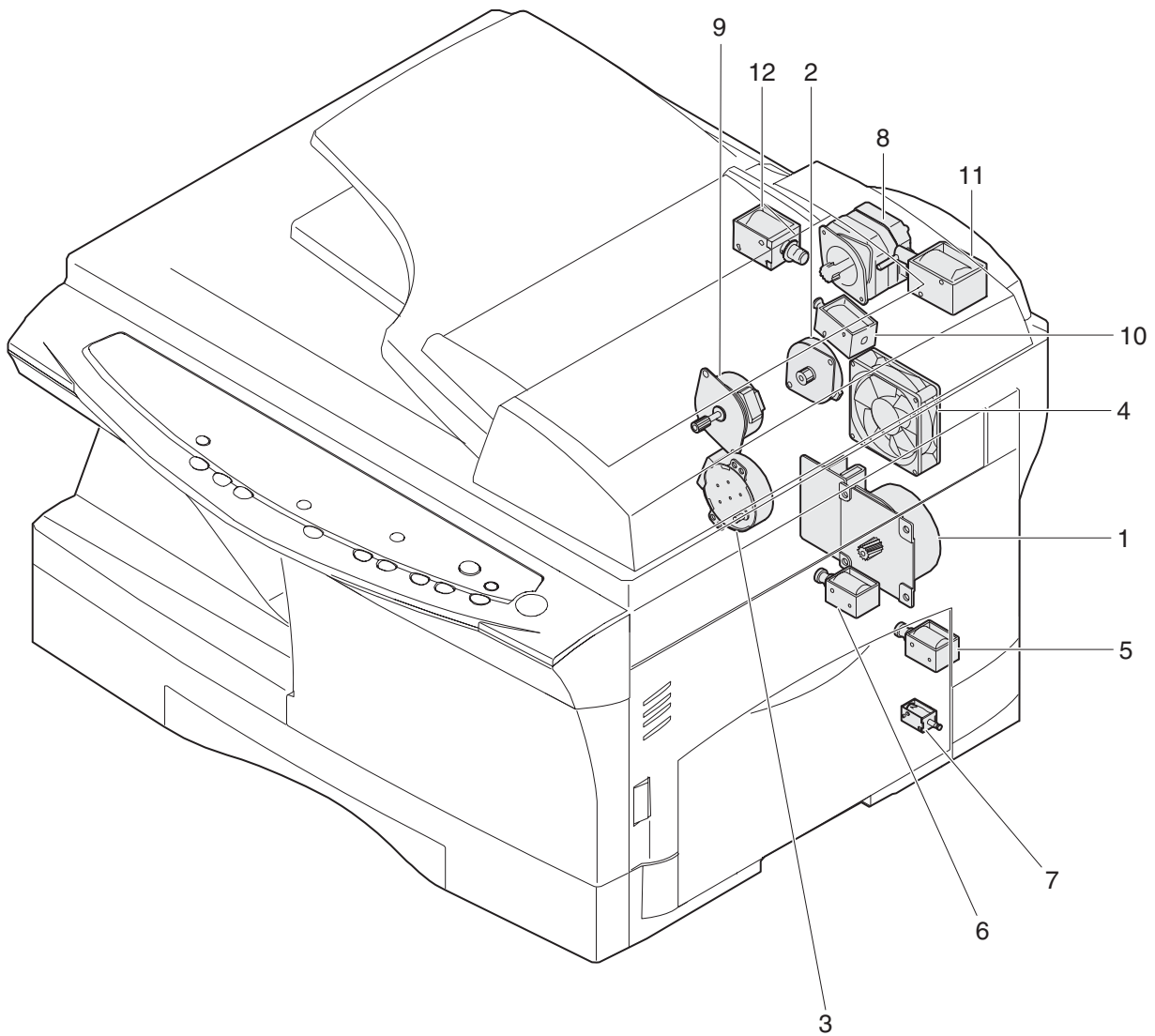
The application numbers are initially as follows.

| Application number | Application launched |
|--------------------|-----------------------------------------------------------------------|
| SC1 | Sharpdesk (if installed) |
| SC2 | E-mail (your standard e-mail program in the Windows OS you are using) |
| SC3 | Fax (if a fax program is installed) |
| SC4 | OCR (if an OCR program is installed) |
| SC5 | Microsoft Word (if installed) |
| SC6 | Any application set in Button Manager |

- 4) Press the start (Ⓢ) key.

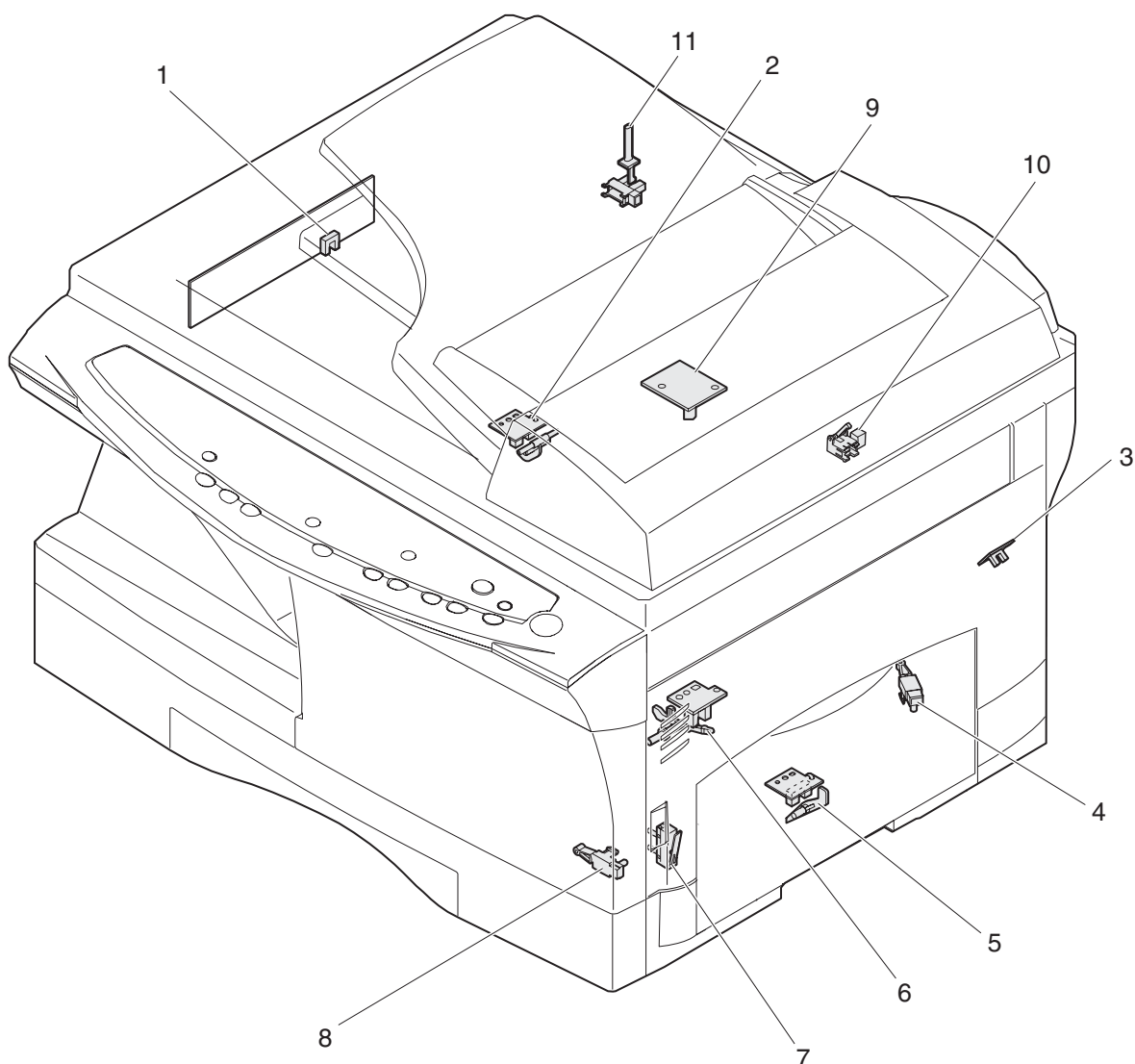
The selected application launches and scanning begins.

4. Motors and solenoids



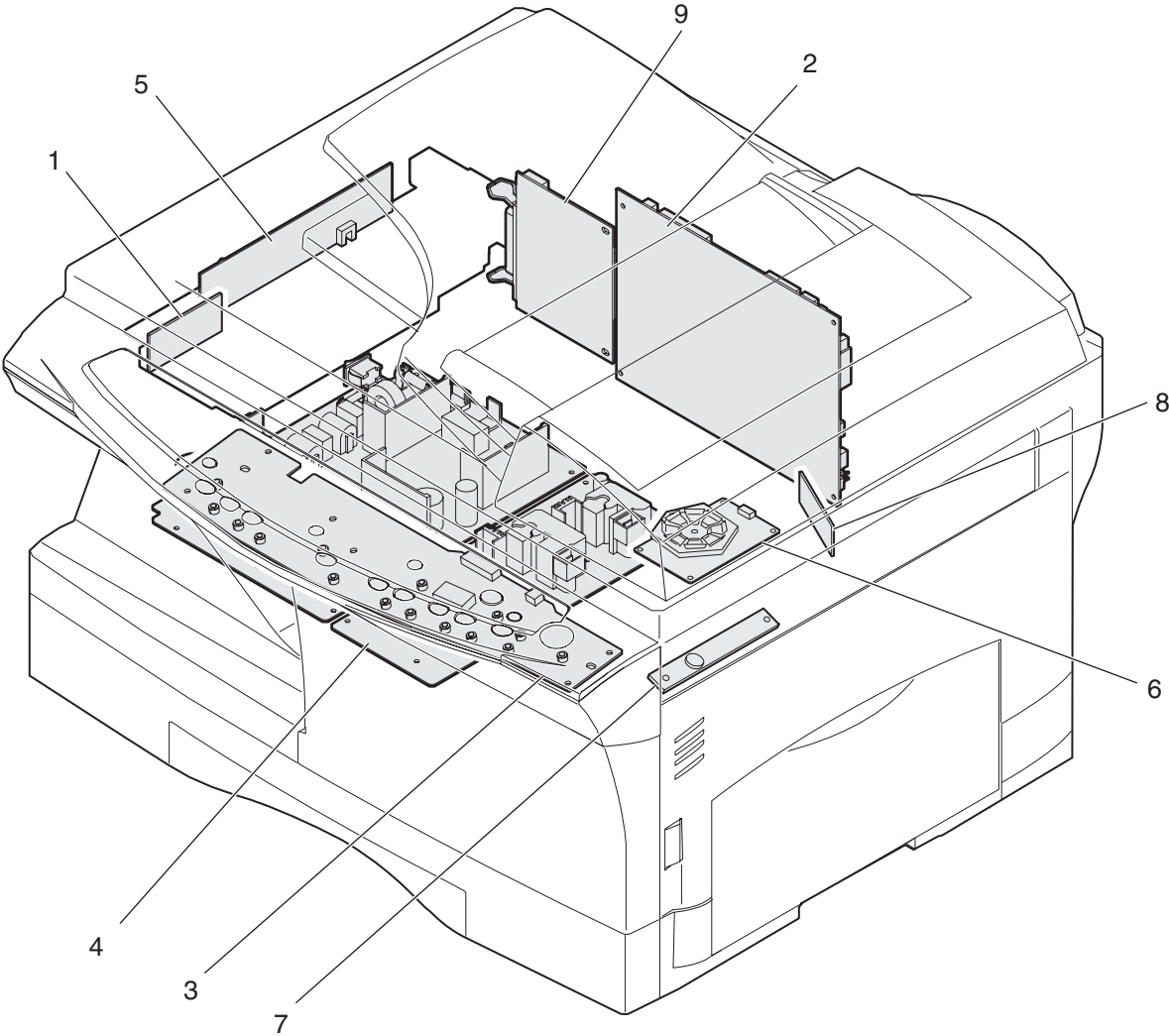
| No. | Part name | Control signal | Function / Operation |
|-----|---------------------------------|----------------|------------------------------------------------|
| 1 | Main motor | MM | Drives the copier. |
| 2 | Scanner motor | MRMT | Drives the optical mirror base (scanner unit). |
| 3 | Toner motor | TM | Supplies toner. |
| 4 | Cooling fan motor | VFM | Cools the optical section. |
| 5 | Resist roller solenoid | RRS | Resist roller rotation control solenoid |
| 6 | Paper feed solenoid | CPFS1 | Cassette Paper feed solenoid 1 |
| 7 | Multi paper feed solenoid | MPFS | Multi manual pages feed solenoid |
| 8 | SPF motor | SPFM | Drives the single pass feeder |
| 9 | Duplex motor | DMT | Devices the duplex paper transport section |
| 10 | Original feed solenoid | SPUS | Original feed solenoid |
| 11 | Original resist roller solenoid | SRRC | Original resist roller solenoid |
| 12 | Original paper feed solenoid | SPFS | Original paper feed solenoid |

5. Sensors and switches



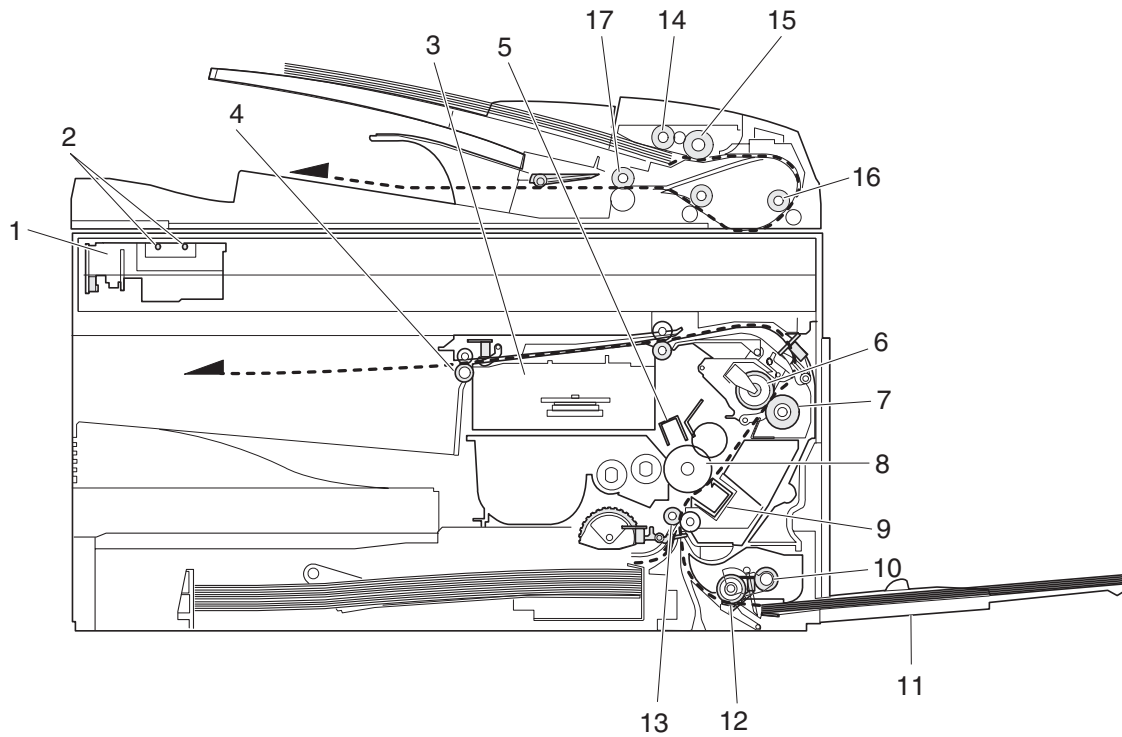
| No. | Name | Signal | Type | Function | Output |
|-----|-----------------------------------|------------|---------------------|-----------------------------------------------------|----------------------------------------------|
| 1 | Scanner unit home position sensor | MHPS | Transmission sensor | Scanner unit home position detection | "H" at home position |
| 2 | POD sensor | POD | Transmission sensor | Paper exit detection | "H" at paper pass |
| 3 | PPD2 sensor | PPD2 | Transmission sensor | Paper transport detection 2 | "L" at paper pass |
| 4 | Cassette detection switch | CED1 | Micro-switch | Cassette installation detection | "L" at cassette insertion |
| 5 | Manual feed detection switch | MFD | Transmission sensor | Manual feed paper detection (single only) | "L" at paper detection |
| 6 | PPD1 sensor | PPD1 | Transmission sensor | Paper transport detection 1 | "L" at paper pass |
| 7 | Door switch | DSW | Micro-switch | Door open/close detection (safety switch for 24V) | 1 or 0V of 24V at door open |
| 8 | Drum reset switch | DRST | Micro-switch | New drum detection switch | Instantaneously "L" at insertion of new drum |
| 9 | SPF sensor | SPID/SD SW | Transmission sensor | Paper entry detection Cover open/close detection | "L" at paper pass |
| 10 | SPPD sensor | SPPD | Transmission sensor | Paper transport detection | "L" at paper pass |
| 11 | SDOD sensor | SDOD | Transmission sensor | SPF open/close detection Book sensor | "L" at paper pass |

6. PWB unit



| No. | Name | Function |
|-----|----------------------------|----------------------------------------------------------|
| 1 | Exposure lamp inverter PWB | Exposure lamp (CCFL) control |
| 2 | Main PWB (MCU) | Copier control |
| 3 | Operation PWB | Operation input/display |
| 4 | Power PWB | AC power input, DC voltage control, High voltage control |
| 5 | CCD sensor PWB | For image scanning |
| 6 | LSU motor PWB | For polygon motor drive |
| 7 | TCS PWB | For toner sensor control |
| 8 | LSU PWB | For laser control |
| 9 | I/F PWB | Scanner/GDI Printer control (parallel I/F, USB I/F) |

7. Cross sectional view



| No. | Part name | Function and operation |
|-----|--------------------------|---------------------------------------------------------------------------------------------------|
| 1 | Scanner unit | Illuminates the original with the copy lamp and passes the reflected light to the lens unit(CCD). |
| 2 | Exposure lamp | Exposure lamp (CCFL) Illuminates original |
| 3 | LSU (Laser unit) | Converts the original image signal into laser beams and writes onto the drum. |
| 4 | Paper exit roller | Roller for paper exit |
| 5 | Main charger | Provides negative charges evenly to the drum surface. |
| 6 | Heat roller | Fuses toner on the paper. (Teflon roller) |
| 7 | Pressure roller | Fuses toner on the paper. (Silicon rubber roller) |
| 8 | Drum | Forms images. |
| 9 | Transfer unit | Transfers images onto the drum. |
| 10 | Pickup roller | Picks up the manual feed paper. (In multi feed only) |
| 11 | Manual paper feed tray | Tray for manual feed paper |
| 12 | Manual paper feed roller | Transport the paper from the manual paper feed port. |
| 13 | PS roller unit | Takes synchronization between the lead edge and the rear edge of the paper. |
| 14 | Pickup roller | Picks up documents. |
| 15 | Separation roller | Separates documents to feed properly. |
| 16 | PS roller | Feeds documents to the scanning section. |
| 17 | Paper exit roller | Discharges documents. |

[5] UNPACKING AND INSTALLATION

1. Copier installation

Improper installation may damage the copier. Please note the following during initial installation and whenever the copier is moved.

Caution: If the copier is moved from a cool place to a warm place, condensation may form inside the copier. Operation in this condition will cause poor copy quality and malfunctions.

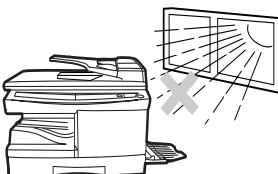
Leave the copier at room temperature for at least 2 hours before use.

Do not install your copier in areas that are:

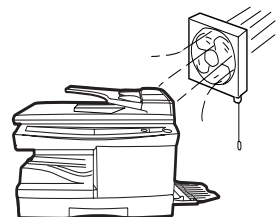
- damp, humid, or very dusty



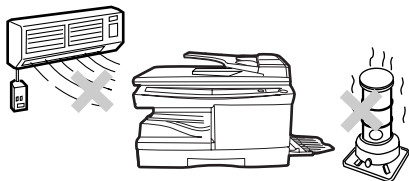
- exposed to direct sunlight



- poorly ventilated



- subject to extreme temperature or humidity changes, e.g., near an air conditioner or heater.

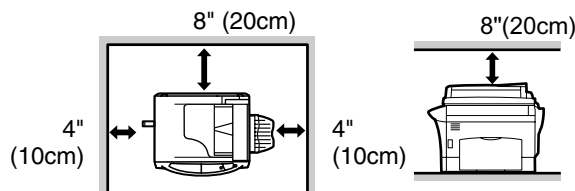


The copier should be installed near an accessible power outlet for easy connection.

Be sure to connect the power cord only to a power outlet that meets the specified voltage and current requirements.

Also make certain the outlet is properly grounded.

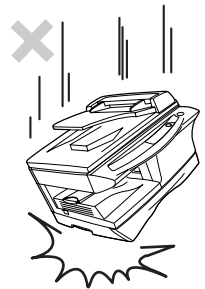
Be sure to allow the required space around the machine for servicing and proper ventilation.



2. Cautions on handling

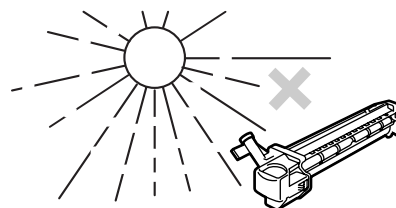
Be careful in handling the copier as follows to maintain the performance of this copier.

Do not drop the copier, subject it to shock or strike it against any object.



Do not expose the drum cartridge to direct sunlight.

Doing so will damage the surface (green portion) of the drum cartridge, causing poor print quality.



Store spare supplies such as drum cartridges and TD cartridges in a dark place without removing from the package before use.

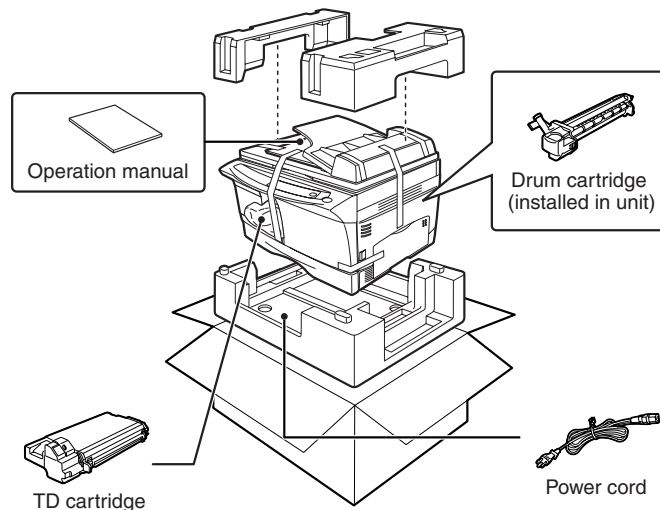
If they are exposed to direct sunlight, poor print quality may result.

Do not touch the surface (green portion) of the drum cartridge.

Doing so will damage the surface of the cartridge, causing poor print quality.

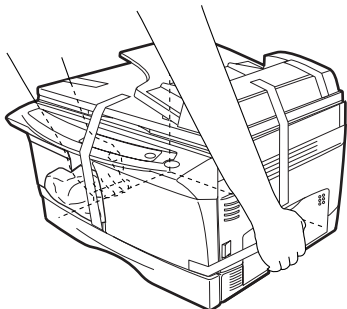
3. Checking packed components and accessories

Open the carton and check if the following components and accessories are included.



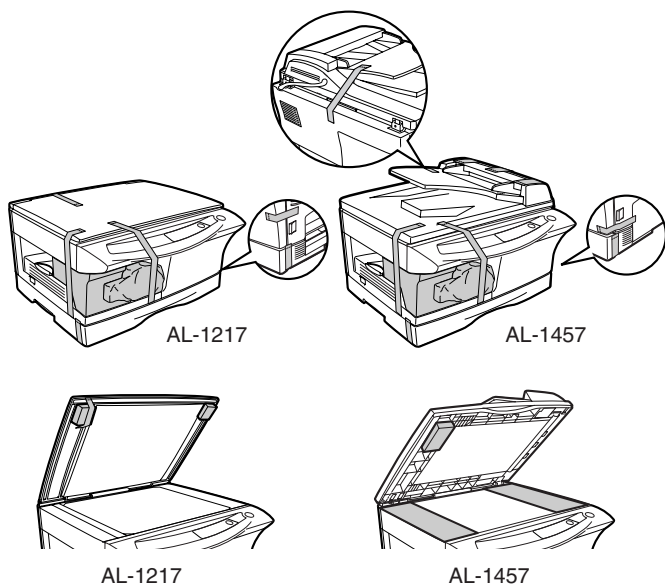
4. Unpacking

Be sure to hold the handles on both sides of the copier to unpack the copier and carry it to the installation location.

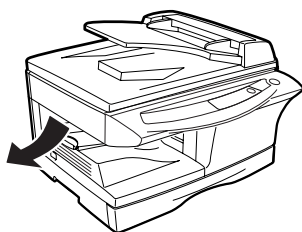
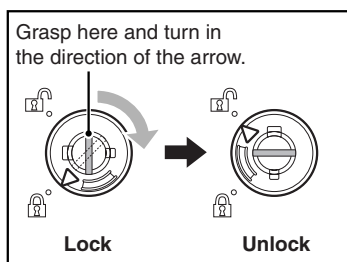


5. Removing protective packing materials

- 1) Remove pieces of tape and protective cover. Then open the original cover and remove protective materials (a) and (b).



- 2) Release the scan head locking switch.



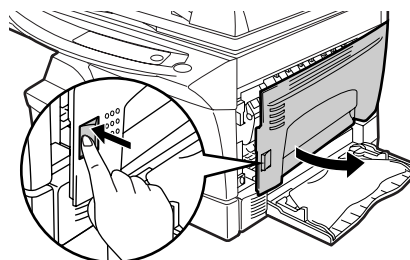
6. Installing the TD cartridge

The TD cartridge replacement required (⚡) indicator will light up when toner is needed. If copying is continued while the ⚡ indicator is lit, copies will gradually become lighter until the copier stops and the indicator begins blinking. Replace the old TD cartridge by following the procedure given below.

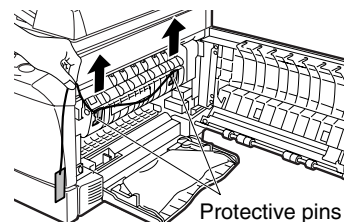
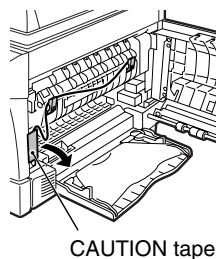
Note:

- After the copier stops, it may be possible to make a few more copies by taking the TD cartridge out of the copier, shaking it horizontally, then reinstalling it. If copying is not possible after this operation, replace the TD cartridge.
- During long copy run of a dark original, the ready (Ⓢ) indicator may blink, the ⚡ indicator may light up, and the copier may stop, even though toner cartridge is not empty. The copier will feed toner up to 2 minutes and then the ready (Ⓢ) indicator will light up. Press the print (Ⓢ) key to restart copying.

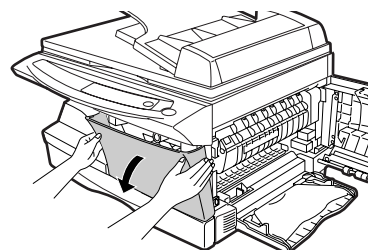
- 1) Ensure that the bypass tray is open and then open the side cover by pressing the open button on the side cover.



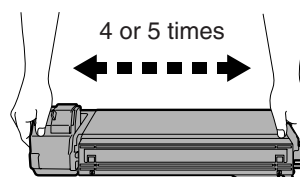
- 2) Remove the CAUTION tape from the front cover and remove the two protective pins from the fusing unit by pulling the strings upward one at a time.



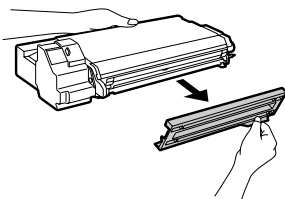
- 3) Push gently on both sides of the front cover to open the cover.



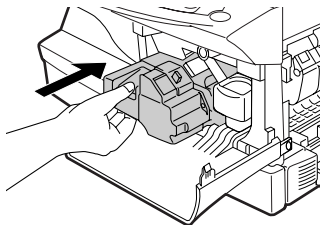
- 4) Remove the TD cartridge from the bag. Remove the protective paper. Hold the cartridge on both sides and shake it horizontally four or five times.



- 5) Hold the tab of the protective cover and pull the tab to remove the cover.

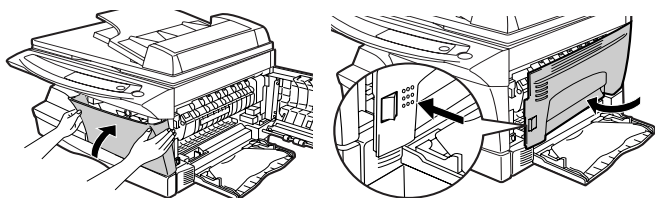


- 6) Gently insert the TD cartridge until it locks in place.



- 7) Close the front cover and then the side cover by pressing the round projections near the side cover open button. The (⊕) indicator will go out and the ready (⊕) indicator will light up.

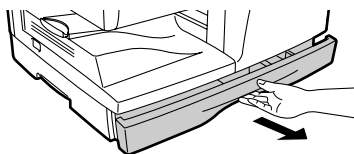
Note: When closing the covers, be sure to close the front cover securely and then close the side cover. If the covers are closed in the wrong order, the covers may be damaged.



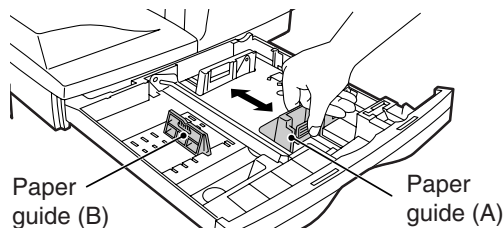
7. Loading copy paper

Note: This copier is equipped with two paper trays. Load copy paper into the two paper trays.

- 1) Raise the handle of the paper tray and pull the paper tray out until it stops.

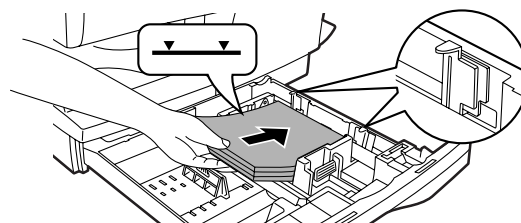


- 2) Remove the pressure plate lock. Rotate the pressure plate lock in the direction of the arrow to remove it while pressing down the pressure plate of the paper tray.
- 3) Store the pressure plate lock that was removed in step 2 and the screw that was removed when unpacking the machine in the front of the paper tray. To store the pressure plate lock, rotate the lock to fix it on the relevant location.
- 4) Adjust the paper guides on the paper tray to the copy paper width and length.
Squeeze the lever of paper guide (A) and slide the guide to match with the width of the paper.
Move paper guide (B) to the appropriate slot as marked on the tray.



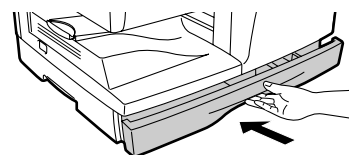
- 5) Fan the copy paper and insert it into the tray. Make sure the edges go under the corner hooks.

Note: Do not load paper above the maximum height line (—). Exceeding the line will cause a paper misfeed.



- 6) Gently push the paper tray back into the copier.

Note: After loading copy paper, to cancel the blinking "H" without restarting copying, press the clear (⊕) key. The "P" in the display will go out and the ready (⊕) indicator will light up.



8. Power to copier

- 1) Ensure that the power switch of the copier is in the OFF position. Insert the attached power cord into the power cord socket at the rear of the copier.
- 2) Plug the other end of the power cord into the nearest outlet.

9. Software for the SHARP personal MFP series

The supplied CD-ROM includes software for this unit.

MFP driver

Scanner driver

Permits you to operate scanning function of this unit with TWAIN-compliant and WIA-compliant application.

Printer driver

Enables you to use the printer function of this unit with your computer.

Print Status Window

The print state and information on current printing are displayed on the status monitor window.

Sharpdesk

An integrated software environment that makes it easy to manage document and image files and launch applications.

Button Manager

Button Manager enabling the SCANNER key located on the unit.

(Hardware and software requirements)

Check the following hardware and software requirements in order to install the software.

| | |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Computer type | IBM PC/AT or compatible computer equipped with a USB1.1 ^{*1} or bi-directional parallel interface (IEEE 1284) |
| Operating system ^{*2} | Windows 95, Windows 98, Windows Me, Windows NT Workstation 4.0 (ServicePack 5 or later) ^{*3} , Windows 2000 Professional, Windows XP Professional ^{*3} , Windows XP Home Edition ^{*3} |
| Display | 800 x 600dots (SVGA) display with 256 colors (or better) |
| Hard disk free space | 150MB or more |
| Other requirement for hardware | An environment on which any of the operating systems listed above can fully operate |

*1: Compatible with Windows 98, Windows Me, Windows 2000 Professional, Windows XP Professional or Windows XP Home Edition preinstalled model with USB interface equipped as standard.

*2: Printing is unavailable in MS-DOS mode.

*3: The administrator's authorization is required to install this software using this installer.

(Before installation)

The following table shows the drivers and software that can be installed for each version of Windows and interface connection method.

| | MFP Driver | | Button Manager | Sharpdesk |
|-------------------------------------------------------------------------------|----------------------------------------|----------------|----------------|-------------------------|
| | Printer driver/ Print Status Window | Scanner driver | | |
| Users of Windows 98/Me/2000/XP who will use the USB interface connection | Available ^{*1} | Available | Available | Available |
| Users of Windows 98/Me/2000/XP who will use the parallel interface connection | | Not Available | Not Available | Available ^{*2} |
| Windows 95/NT 4.0 users | | | | |

*1: When the unit is connected through the parallel port, the Print Status Window can only be used when the parallel port is set to ECP mode. To set the parallel port mode, refer to your computer manual or ask the manufacturer of your computer.

*2: Sharpdesk can be installed when using a parallel interface connection, however, the unit's scanner function cannot be used.

- If you are using some of your computer's memory as a RAM drive, the printer driver may not be allocated the correct amount of memory. In such a case, reduce the size of your RAM disk, or do not use the RAM disk. Please refer to your Windows documentation for further information.
- Is there another GDI printer driver or a Windows Printing System printer driver already installed? If installed, change the printer port setting. For the change of the printer port setting, see "USING OTHER INSTALLED DRIVERS".

(Flow of installation)

Refer to the following table and then begin installation

| Operating system | Interface | Reference pages for how to install |
|-------------------|------------------|------------------------------------------------------------------|
| Windows XP | USB/ Parallel | Installing onto Windows XP (USB/parallel interface) |
| Windows 98 | USB | Installing onto Windows 98/Me/2000 (USB interface) |
| | Parallel | Installing onto Windows 95/98/Me/NT4.0/2000 (Parallel interface) |
| Windows Me | USB | Installing onto Windows 98/Me/2000 (USB interface) |
| | Parallel | Installing onto Windows 95/98/Me/NT4.0/2000 (Parallel interface) |
| Windows 2000 | USB | Installing onto Windows 98/Me/2000 (USB interface) |
| | Parallel | Installing onto Windows 95/98/Me/NT4.0/2000 (Parallel interface) |
| Windows 95/NT 4.0 | Parallel | Installing onto Windows 95/98/Me/NT4.0/2000 (Parallel interface) |

(Installing the software)

The following term is used in this section.

MFP

Means the unit as a printer and scanner.

- For this description, it is assumed that the mouse is configured for right hand operation.
- To print or scan, the MFP must be in the online state.
- The scanner feature only works when using a USB interface cable.
- If any error message appears, solve the problem following the instructions on the screen. After your problem is solved, the installing procedure will be continued. Depending on your problem, you may have to exit the installer. In this case, click the "Cancel" button to exit the installer. After solving your problem, reinstall the software from the beginning.

A. Windows XP (USB/parallel interface)

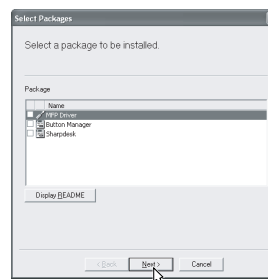
Before starting the installation, make sure the USB or parallel interface cable is not connected to the MFP.

- 1) Insert the supplied CD-ROM into your CD-ROM drive.
- 2) Click the "start" button, click "My Computer", and then double-click the CD-ROM icon.
 - When any of "Found New Hardware Wizard" messages appear during the software installation, be sure to click the "Cancel" button.
- 3) Double-click the "Setup" icon.

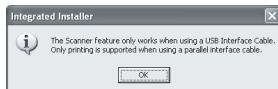
If the language selection screen appears after you double click the "Setup" icon, select the language you wish to use and click the "Next" button. (Normally, the correct language is selected automatically.)
- 4) Select the software packages to be installed, and then click the "Next" button.

The software packages with checkmark on the list on the screen will be installed.

Click the "Display README" button to show the information on the selected package.

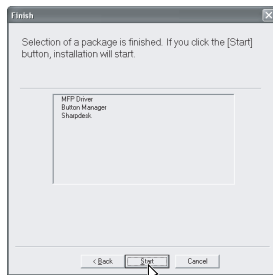


- If you are using the parallel interface connection, do not select the Button Manager checkbox because this feature is not supported with the parallel interface.
- If the following screen appears, click the "OK" button. Review the contents in "BEFORE INSTALLATION", and then select only appropriate the software packages to be installed.



- 5) Review the software packages to be installed on the screen, and then click the "Start" button.

The software packages to be installed will be displayed on the screen. If inappropriate packages are displayed, click the "Back" button to select appropriate packages again.



- 6) Copying files for MFP driver installation and parallel interface setup (This step will start if it was selected in step 4).

1. After confirming the message in the "Welcome" window, click the "Next" button.
2. A dialog box appears asking you to verify that the USB or parallel interface cable is not connected to the MFP. Make sure that the interface cable is not connected and click the "Next" button.
3. Click the "Next" button in the dialog box to install the MFP driver or Cancel to quit the installation.

The setup program will start to copy the files.

If the following screen appears while the files are being copied (the message may appear more than once), click "Continue Anyway".



4. When the "The MFP driver installation is complete." dialog box appears, click the "OK" button.
- 7) Begin installation of the Button Manager (This step will start if it was selected in step 4).

1. After confirming the message in the "Welcome" window, click the "Next" button.
2. Read the message in the "Please read the following information." window, and then click the "Next" button.
3. When a message appears that lets you specify the location for the software to be installed, click the "Next" button.
4. If the program displays, "Do you want the Button Manager added to Windows Startup?", check "Yes" and click the "OK" button.

The setup program will start to copy the files.

5. Click the "Finish" button when the message informs you that setup is successful.

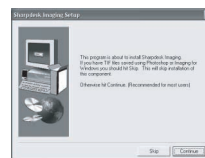
The Sharpdesk installer will start.

- 8) Begin installation of the Sharpdesk (This step will start if it was selected in step 4).

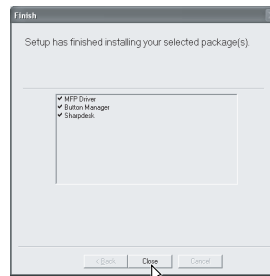
1. After confirming the message in the "Welcome to Sharpdesk installation" window, click the "Next" button.
2. Read the message in the "Information" window, and then click the "Next" button.
3. When the "Choose Destination Location" window appears, click the "Next" button.
4. When the "Select Program Folder" window appears, click the "Next" button.

The setup program will start to copy the files.

If the dialog box asking "If you have TIFF files saved using Photo-Shop or Imaging for Windows you should hit Skip" appears. Answer the question to continue the Sharpdesk installation.



5. Click the "Finish" button when the message informs you that Setup is complete.
- 9) Click the "Close" button when the message informs you that "Setup has finished". When the "Now connect the MFP interface cable to the PC" dialog box appears, click the "OK" button.
- After the installation, a message to restart your computer may be displayed. In this case, click the "Yes" button to restart your computer.
- For parallel interface connection ensure that your computer and MFP are turned off before connecting the cable.



- 10) Connect the USB interface cable or parallel interface cable (see page 5-8).

Windows will detect the MFP and the Plug and Play screen will appear. If you are using Windows XP with the parallel interface, go to step 12.

- 11) Begin installation of the scanner driver.

1. "SHARP AL-xxxx" (where xxxx is the model name of your MFP) will appear in the "Found New Hardware Wizard" dialog box. Select "Install the software automatically (Recommended)" and click the "Next" button.
2. The "Install hardware" dialog box will appear. Click the "Continue Anyway" button.
3. When installation of the driver is completed, click the "Finish" button to finish the scanner driver installation.

- 12) Begin installation of the printer driver.

1. "SHARP AL-xxxx" (where xxxx is the model name of your MFP) will appear in the "Found New Hardware Wizard" dialog box. Select "Install the software automatically (Recommended)" and click the "Next" button.
2. The "Hardware Installation" dialog box will appear. Click the "Continue Anyway" button.
3. When installation of the driver is completed, click the "Finish" button to finish the printer driver installation.

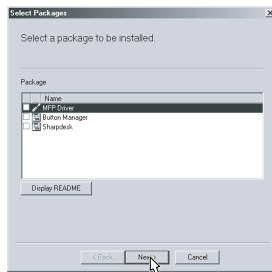
You have completed the installation of all the software.

B. Windows 98/Me/2000 (USB interface)

Before starting the installation, make sure the USB interface cable is not connected to the MFP.

- 1) Insert the supplied CD-ROM into your CD-ROM drive.
- 2) Double-click "My Computer", and then double-click the CD-ROM icon.
 - When any of "Hardware Found", or "Found New Hardware Wizard" messages appear during the software installation, be sure to click the "Cancel" button.
- 3) Double-click the "Setup" icon.
 - If the language selection screen appears after you double click the "Setup" icon, select the language you wish to use and click the "Next" button. (Normally, the correct language is selected automatically.)
- 4) Select the software packages to be installed, and then click the "Next" button.

The software packages with checkmark on the list on the screen will be installed. Click the "Display README" button to show the information on the selected package.



- If the following screen appears, click the "OK" button. Review the contents in "BEFORE INSTALLATION", and then select the appropriate driver software packages to be installed.



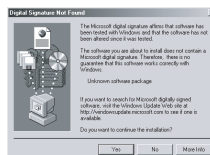
- 5) Review the software packages to be installed on the screen, and then click the "Start" button.

The software packages to be installed will be displayed on the screen. If inappropriate packages are displayed, click the "Back" button to select appropriate packages again.

- 6) Copying files for MFP driver installation.
 1. After confirming the message in the "Welcome" window, click the "Next" button.
 2. A dialog box appears asking you to verify that the interface cable is not connected to the MFP. Make sure that the interface cable is not connected and click the "Next" button.
 3. Click the "Next" button in the dialog box showing the files to be copied for installation of the MFP driver.

The setup program will start to copy the files.

In Windows 2000, if the following screen appears while the files are being copied (the message may appear more than once), click "Yes" in Windows 2000.



4. The following screen appears when all of the files for the USB interface connection have been copied. If you are not using a parallel interface cable for connection to the MFP, please click the "No" button.



5. When the "The MFP driver installation is complete." dialog box appears, click the "OK" button.

The Button Manager installer will start.
- 7) Begin installation of the Button Manager (This step will start if it was selected in step 4).
 1. After confirming the message in the "Welcome" window, click the "Next" button.
 2. Read the message in the "Please read the following information." window, and then click the "Next" button.
 3. When a message appears that lets you specify the location for the software to be installed, click the "Next" button.
 4. If the program displays, "Do you want to add Button Manager to Startup program?", check "Yes" and click the "OK" button.

The setup program will start to copy the files.
 5. Click the "Finish" button when the message to inform you of the completion of the installation appears.

The Sharpdesk installer will start.
- 8) Begin installation of the Sharpdesk (This step will start if it was selected in step 4).
 1. After confirming the message in the "Welcome to Sharpdesk installation" window, click the "Next" button.
 2. Read the message in the "Information" window, and then click the "Next" button.
 3. When the "Choose Destination Location" window appears, click the "Next" button.
 4. When the "Select Program Folder" window appears, click the "Next" button.

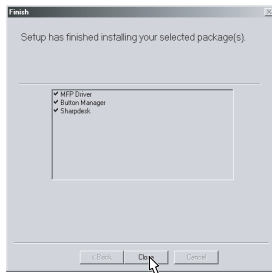
The setup program will start to copy the files.

If the dialog box asking "If you have TIFF files saved using Photo-Shop or Imaging for Windows you should hit Skip" appears. Answer the question to continue the Sharpdesk installation.



5. Click the "Finish" button when the message to inform you of the completion of the installation appears.

- 9) Click the "Close" button when the message to inform you of the completion of the installation appears. When the "Now connect the MFP interface cable to the PC. This will finalize the drivers installation and settings." dialog box appears, click the "OK" button.

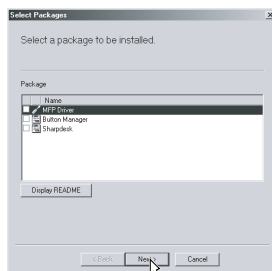


- After the installation, a message to restart your computer may be displayed. In this case, click the "Yes" button to restart your computer.
- 10) Connect the USB interface cable (see page 5-8).
Windows will detect the MFP and the Plug and Play screen will appear.
 - 11) Follow the instructions in the Plug and Play screen that appears in your version of Windows to begin the installation.
You have completed the installation of the software.

C. Windows 95/98/Me/NT4.0/2000 (Parallel interface)

Before starting the installation, make sure the USB or parallel interface cable is not connected to the MFP.

- 1) Insert the supplied CD-ROM into your CD-ROM drive.
- 2) Double-click "My Computer", and then double-click the CD-ROM icon.
 - When any of "Hardware Found", or "Found New Hardware Wizard" messages appear during the software installation, be sure to click the "Cancel" button.
- 3) Double-click the "Setup" icon.
 - If the language selection screen appears after you double click the "Setup" icon, select the language you wish to use and click the "Next" button. (Normally, the correct language is selected automatically.)
- 4) Select the software packages to be installed, and then click the "Next" button.
The software packages with checkmark on the list on the screen will be installed.
Click the "Display README" button to show the information on the selected package.

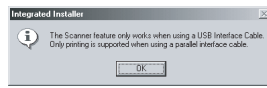


- In Windows 95/NT 4.0, "Button Manager" does not appear. In Windows 98/Me/2000, do not select the "Button Manager" checkbox, because this is not supported when using the parallel interface.
- 5) The next screen appears. Make sure that the parallel interface cable is not connected, and click "OK".

Windows 95/NT 4.0



Windows 98/Me/2000

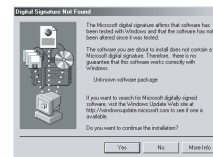


- 6) Check the contents of the package on the screen, and then click the "Start" button.
The software packages to be installed will be displayed on the screen. If inappropriate packages are displayed, click the "Back" button to select only appropriate software packages.
- 7) Copying files for MFP driver installation and parallel interface setup (This step will start if it was selected in step 4).

1. After confirming the message in the "Welcome" window, click the "Next" button.
2. A dialog box appears asking you to verify that the USB or parallel interface cable is not connected to the MFP. Make sure that the interface cable is not connected and click the "Next" button.
3. Click the "Next" button in the dialog box to install the MFP driver or Cancel to quit the installation.

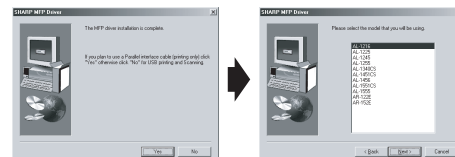
The setup program will start to copy the files.

In Windows 2000, if the following screen appears while the files are being copied (the message may appear more than once), click "Yes" in Windows 2000.

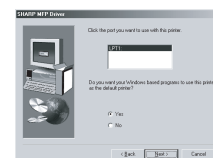


4. The following screen appears. Click the "Yes" button, and then the Model screen will appear. Select the model number that is the same as the model name of your MFP and click the "Next" button.

Be sure to select the displayed model number that is the same as the MFP's model name. If they are not the same, the driver will not be installed correctly.



5. Establish the printer settings and click the "Next" button.
Select "LPT1" for the port to be used. If "LPT1" does not appear, it is likely that another printer or peripheral device is using "LPT1". Check your other printers and peripheral devices, and change the port setting as needed so no device is using "LPT1". If you wish the MFP to be your default printer, select "Yes". If not, select "No".



6. When the "Setup has completed gathering all necessary installation information" dialog box appears, click the "Yes" button.
The parallel interface driver is installed.
7. When the "The MFP driver installation is complete." dialog box appears, click the "OK" button.
The Sharpdesk installer will start.
- 8) Begin installation of the Sharpdesk (This step will start if it was selected in step 4).
 1. After confirming the message in the "Welcome to Sharpdesk installation" window, click the "Next" button.
 2. Read the message in the "Information" window, and then click the "Next" button.
 3. When the "Choose Destination Location" window appears, click the "Next" button.

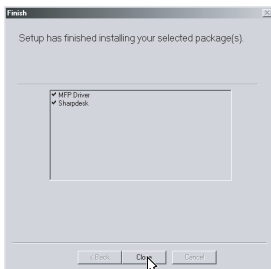
- When the "Select Program Folder" window appears, click the "Next" button.

The setup program will start to copy the files.

If the dialog box asking "If you have TIFF files saved using Photo-Shop or Imaging for Windows you should hit Skip" appears. Answer the question to continue the Sharpdesk installation.



- Click the "Finish" button when the message to inform you of the completion of the installation appears.
- Click the "Close" button when the message to inform you of the completion of the installation appears.



- After the installation, a message to restart your computer may be displayed. In this case, click the "Yes" button to restart your computer.
- Connect the parallel interface cable.

You have completed the installation of all the software.

 - For parallel interface connection ensure that your computer and MFP are turned off before connecting the cable (see page 5-8).

10. Connecting the interface cable

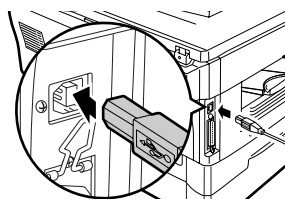
This unit includes both USB and parallel interface connectors. Interface cables for connecting the unit to your computer are not included with this unit.

Caution:

- If you intend to use the unit as a scanner, it must be connected to your computer with a USB interface cable. The scanner function cannot be used if the unit is connected with a parallel cable.
- USB is available with a PC/AT compatible computer that was originally equipped with USB and had Windows 98, Windows Me, Windows 2000 Professional, Windows XP Professional or Windows XP Home Edition preinstalled.
- Do not connect the interface cable before installing the MFP driver. The interface cable should be connected during installation of the MFP driver.

Connecting the USB interface cable

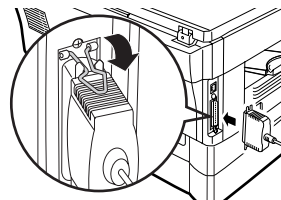
- Obtain a shielded USB interface cable.
- Insert the cable into the USB interface connector located on the rear of the unit.



- Insert the other end of the cable into the interface connector of your computer, or the USB hub connected to your computer.

Connecting the parallel interface cable

- Obtain an IEEE1284 shielded parallel interface cable.
- Ensure that your computer and unit are turned off.
- Insert the cable into the parallel interface connector located on the rear of the unit, and fasten with clasps.



- Insert the other end of the cable into the interface connector of your computer.

11. Parallel interface

This printer uses a bi-directional parallel interface. Use the supplied interface cable.

Connector

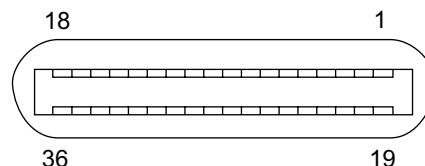
36-pin ACON RBE42-36K1153 female connector or equivalent connector

Cable

Shielded type bi-directional parallel interface For best results, use a printer interface cable which is IEEE1284 compliant.

Pin configuration

The pin numbers and signal names are listed in the following table.



| Pin No. | Signal name | Pin No. | Signal name |
|---------|----------------|---------|------------------|
| 1 | STB | 19 | GND (STB RET) |
| 2 | DATA1 | 20 | GND (DATA1 RET) |
| 3 | DATA2 | 21 | GND (DATA2 RET) |
| 4 | DATA3 | 22 | GND (DATA3 RET) |
| 5 | DATA4 | 23 | GND (DATA4 RET) |
| 6 | DATA5 | 24 | GND (DATA5 RET) |
| 7 | DATA6 | 25 | GND (DATA6 RET) |
| 8 | DATA7 | 26 | GND (DATA7 RET) |
| 9 | DATA8 | 27 | GND (DATA8 RET) |
| 10 | ACKNLG | 28 | GND (ACKNLG RET) |
| 11 | BUSY | 29 | GND (BUSY RET) |
| 12 | PE (Paper End) | 30 | GND (PE RET) |
| 13 | SLTC | 31 | INPRM |
| 14 | AUTO LF | 32 | FAULT |
| 15 | (NC) | 33 | (NC) |
| 16 | GND (0 V) | 34 | (NC) |
| 17 | FG | 35 | +5 V |
| 18 | +5 V | 36 | SLTC IN |

12. USB interface

Connector

4-pin ACON UBR23-4K2200

Type-B connector

Cable

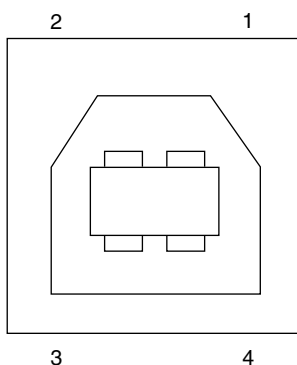
Shielded twisted pair cable

(2 m (6 feet) Max.: high-speed transmission equivalent)

Pin configuration

The pin numbers and signal names are listed in the following table.

| Pin No. | Signal name |
|---------|-------------|
| 1 | +5V |
| 2 | -DATA |
| 3 | +DATA |
| 4 | GND |



13. Moving

Moving instructions

When moving the unit, follow the procedure below.

Note: When moving this unit, be sure to remove the TD cartridge in advance.

- 1) Turn the power switch off and remove the power cord from the outlet.
- 2) Open the side cover and front cover, in that order. Remove the TD cartridge and close the front cover and side cover, in that order.
To open and close the side cover and front cover, and to remove the TD cartridge, see "TD CARTRIDGE REPLACEMENT".
- 3) Raise the handle of the paper tray and pull the paper tray out until it stops.
- 4) Push the center of the pressure plate down until it locks in place and lock the plate using the pressure plate lock which has been stored in the front of the paper tray.

5) Push the paper tray back into the unit.

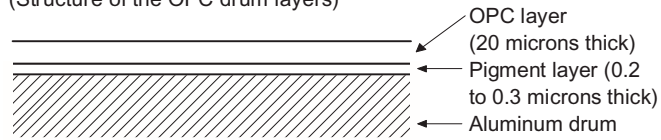
6) Lock the scan head locking switch.

Note: When shipping the unit, the scan head locking switch must be locked to prevent shipping damage.

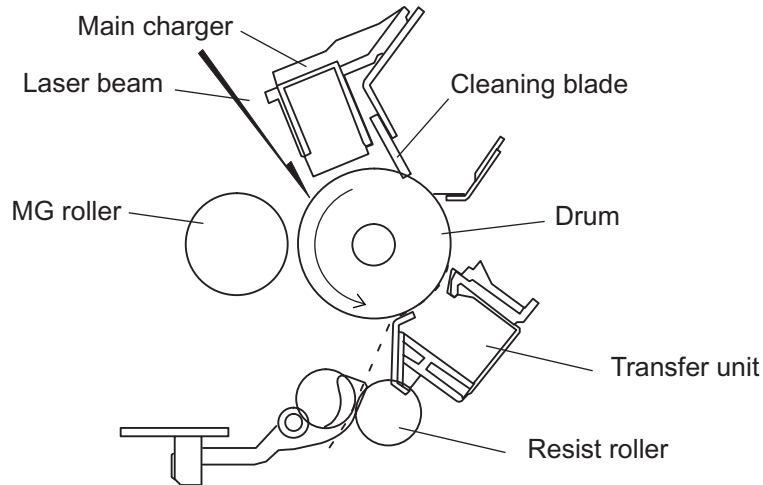
- 7) Close the multi-bypass tray and the paper output tray extension, and attach the packing materials and tape which were removed during installation of the unit. See "PREPARING THE UNIT FOR INSTALLATION".
- 8) Pack the unit into the carton. See "CHECKING PACKED COMPONENTS AND ACCESSORIES".

[6] COPY PROCESS

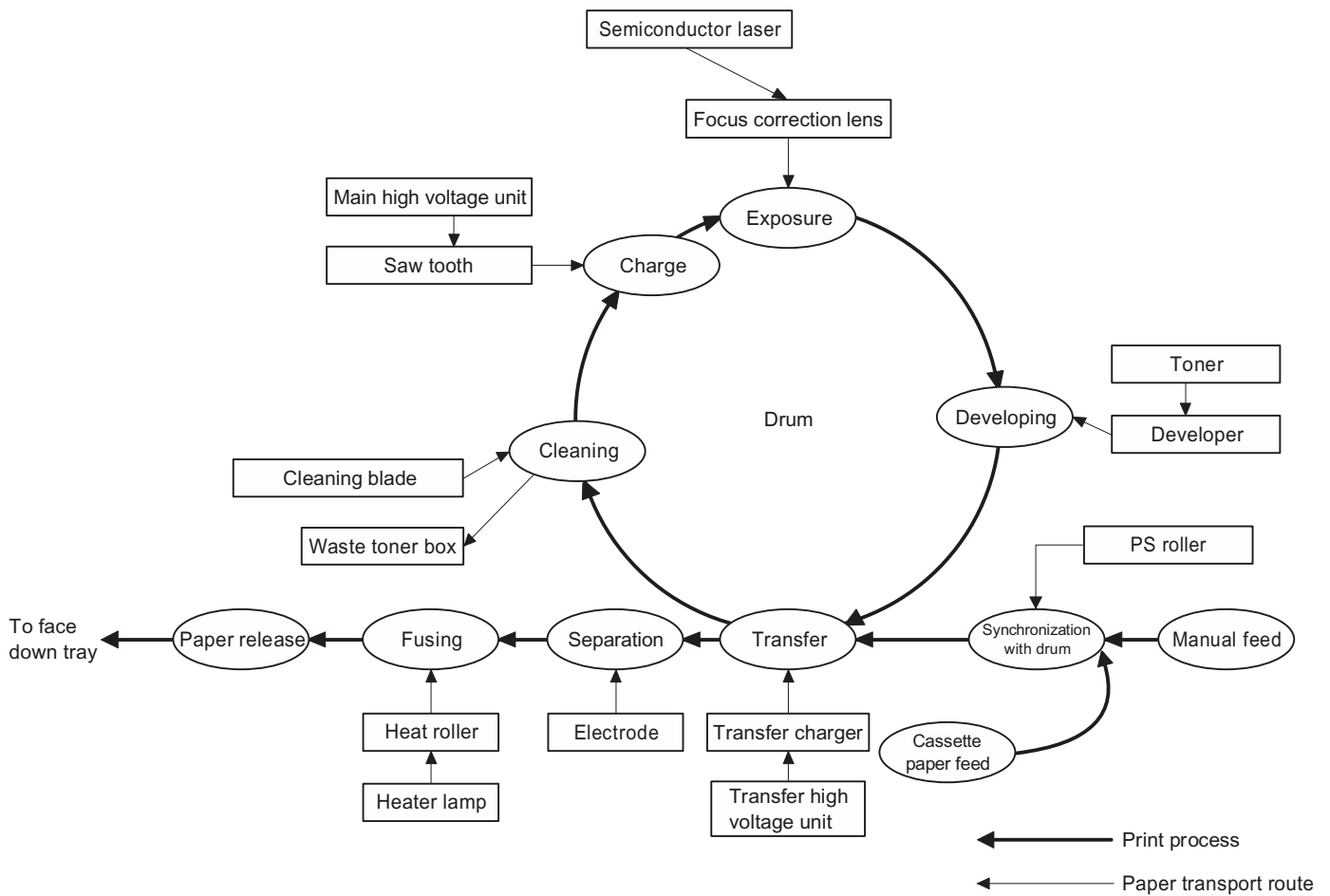
An OPC drum is used for the photoconductor.
(Structure of the OPC drum layers)



1. Functional diagram



(Basic operation cycle)



2. Outline of print process

This printer is a non-impact printer that uses a semiconductor laser and electrostatic print process. This printer uses an OPC (Organic Photo Conductor) for its photoconductive material.

First, voltage from the main corona unit charges the drum surface and a latent image is formed on the drum surface using a laser beam. This latent image forms a visible image on the drum surface when toner is applied. The toner image is then transferred onto the print paper by the transfer corona and fused on the print paper in the fusing section with a combination of heat and pressure.

Step-1: Charge

Step-2: Exposure

* Latent image is formed on the drum.

Step-3: Developing

Latent image formed on the drum is then changed into visible image with toner.

Step-4: Transfer

The visible image (toner image) on the drum is transferred onto the print paper.

Step-5: Cleaning

Residual toner on the drum surface is removed and collected by the cleaning blade.

Step-6: Optical discharge

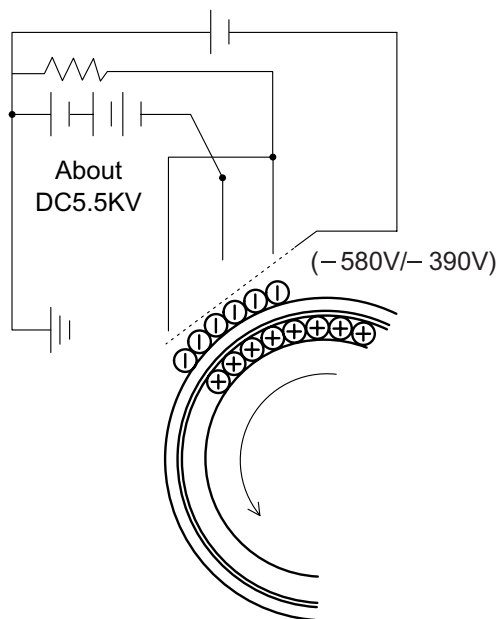
Residual charge on the drum surface is removed, by semiconductor laser beam.

3. Actual print process

Step-1: DC charge

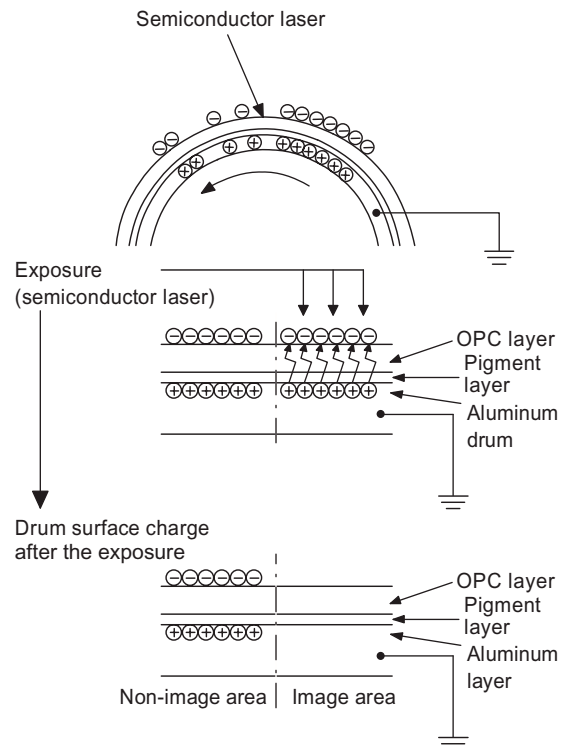
A uniform negative charge is applied over the OPC drum surface by the main charging unit. Stable potential is maintained by means of the Scorotron charger.

Positive charges are generated in the aluminum layer.



Step-2: Exposure (laser beam, lens)

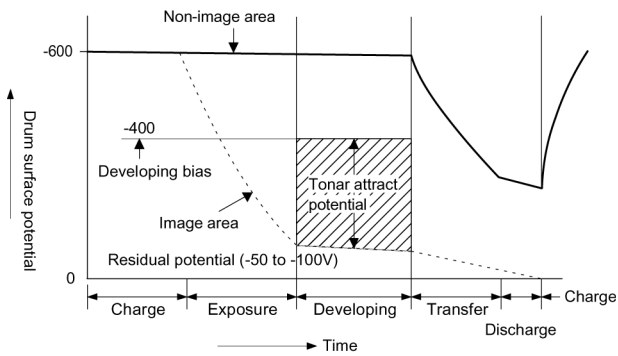
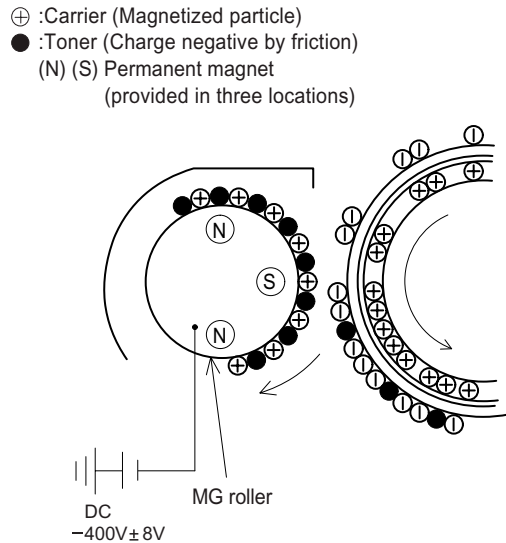
A Laser beam is generated from the semiconductor laser and controlled by the print pattern signal. The laser writes onto the OPC drum surface through the polygon mirrors and lens. The resistance of the OPC layer decreases for an area exposed by the laser beam (corresponding to the print pattern signal). The beam neutralizes the negative charge. An electrostatic latent image is formed on the drum surface.



Step-3: Developing (DC bias)

A bias potential is applied to the MG roller in the two component magnetic brush developing method, and the toner is charged negative through friction with the carrier.

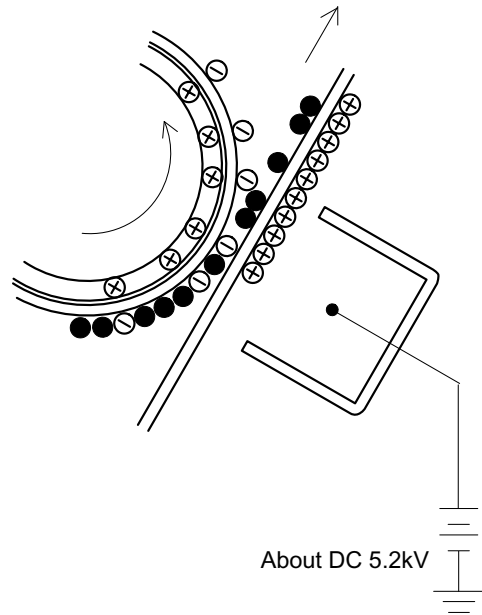
Non-image area of the drum surface charged with negative potential repel the toner, whereas the laser exposed portions where no negative charges exist, attract the toner. As a result, a visible image appears on the drum surface.



Toner is attracted over the shadowed area because of the developing bias.

Step-4: Transfer

The visible image on the drum surface is transferred onto the print paper by applying a positive charge from the transfer corona to the backside of the print paper.

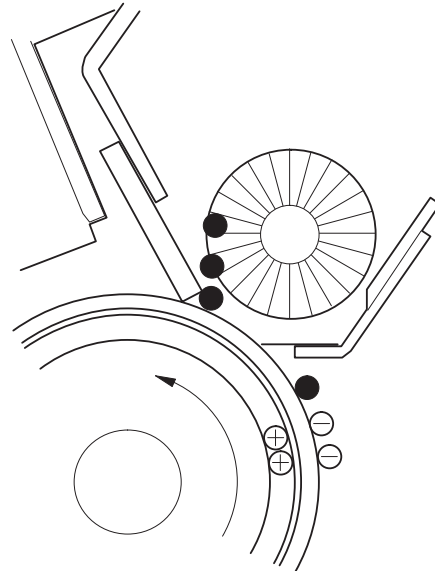


Step-5: Separation

Since the print paper is charged positively by the transfer corona, it is discharged by the separation corona. The separation corona is connected to ground.

Step-6: Cleaning

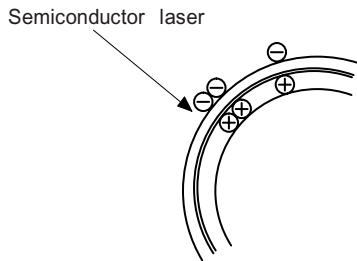
Toner remaining on the drum is removed and collected by the cleaning blade. It is transported to the waste toner collecting section in the cleaning unit by the waste toner transport roller.



Step-7: Optical discharge (Semiconductor laser)

Before the drum rotation is stopped, the semiconductor laser is radiated onto the drum to reduce the electrical resistance in the OPC layer and eliminate residual charge, providing a uniform state to the drum surface for the next page to be printed.

When the electrical resistance is reduced, positive charges on the aluminum layer are moved and neutralized with negative charges on the OPC layer.



Charge by the Scorotron charger

Function

The Scorotron charger functions to maintain uniform surface potential on the drum at all times. It controls the surface potential regardless of the charge characteristics of the photoconductor.

Basic function

A screen grid is placed between the saw tooth and the photoconductor. A stable voltage is added to the screen grid to maintain the corona current on the photoconductor.

As the photoconductor is charged by the saw tooth from the main corona unit, the surface potential increases. This increases the current flowing through the screen grid. When the photoconductor potential nears the grid potential, the current turns to flow to the grid so that the photoconductor potential can be maintained at a stable level.

Process controlling

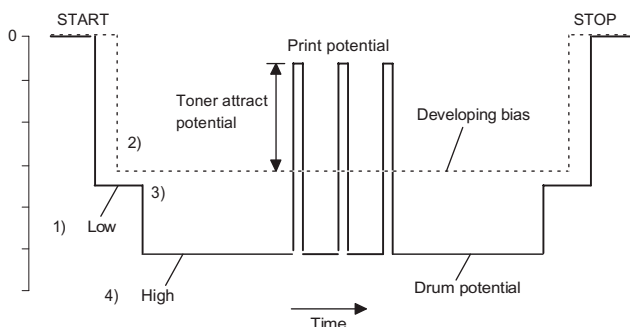
Function

The print pattern signal is converted into an invisible image by the semiconductor laser using negative to positive (reversible) developing method. Therefore, if the developing bias is added before the drum is charged, toner is attracted onto the drum. If the developing bias is not added when the drum is charged, the carrier is attracted to the drum because of the strong electrostatic force of the drum.

To avoid this, the process is controlled by adjusting the drum potential and the grid potential of the Scorotron charger.

Basic function

Voltage added to the screen grid can be selected, high and low. To make it easily understood, the figure below shows voltage transition at the developer unit.



Start

- 1) Because the grid potential is at a low level, the drum potential is at about -400V. (Carrier may not be attracted though the carrier is pulled towards the drum by the electrostatic force of -400V.
- 2) Developing bias (-400V) is applied when the photoconductor potential is switched from LOW to HIGH.
- 3) Once developing bias (-400V) is applied and the photoconductor potential rises to HIGH, toner will not be attracted to the drum.

Stop

The reverse sequence takes place.

Retaining developing bias at an abnormal occurrence

Function

The developing bias will be lost if the power supply was removed during print process. In this event, the drum potential slightly abates and the carrier makes deposits on the drum because of strong static power. To prevent this, the machine incorporates a function to retain the developing bias for a certain period and decrease the voltage gradually against possible power loss.

Basic function

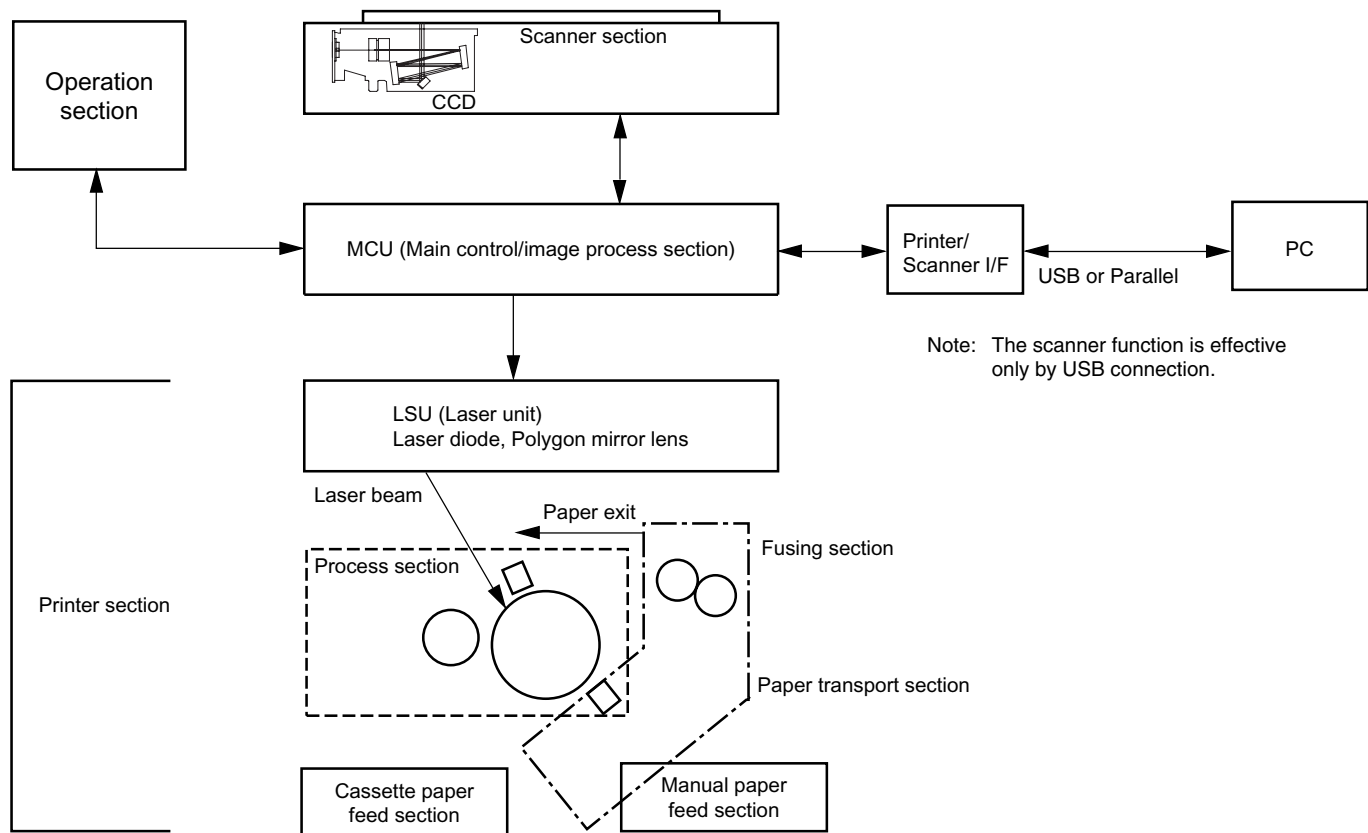
Normally, the developing bias voltage is retained for a certain time before the drum comes to a complete stop if the machine should stop before completing the normal print cycle. The developing bias can be added before resuming the operation after an abnormal interruption. Therefore, carrier will not make a deposit on the drum surface.

[7] OPERATIONAL DESCRIPTIONS

1. Outline of operation

The outline of operation is described referring to the basic configuration.

(Basic configuration)



(Outline of copy operation)

Setting conditions

- 1) Set copy conditions such as the copy quantity and the copy density with the operation section, and press the COPY button. The information on copy conditions is sent to the MCU.

Image scanning

- 2) When the COPY button is pressed, the scanner section starts scanning of images.
The light from the copy lamp is reflected by the document and passed through the lens to the CCD.

Photo signal/Electric signal conversion

- 3) The image is converted into electrical signals by the CCD circuit and passed to the MCU.

Image process

- 4) The document image signal sent from the CCD circuit is processed under the revised conditions and sent to the LSU (laser unit) as print data.

Electric signal/Photo signal (laser beam) conversion

- 5) The LSU emits laser beams according to the print data.
(Electrical signals are converted into photo signals.)
- 6) The laser beams are radiated through the polygon mirror and various lenses to the OPC drum.

Printing

- 7) Electrostatic latent images are formed on the OPC drum according to the laser beams, and the latent images are developed to be visible images (toner images).
- 8) Meanwhile the paper is fed to the image transfer section in synchronization with the image lead edge.
- 9) After the transfer of toner images onto the paper, the toner images are fused to the paper by the fusing section. The copied paper is discharged onto the exit tray.

(Outline of printer operation)

The print data sent from the PC are passed through the I/F and the MCU to the LSU. The procedures after that are the same as above 5) and later.

(Outline of scanner operation)

The scan data are passed through the MCU and the I/F to the PC according to the conditions requested by the PC or set by the operations with the operation panel.

2. Scanner section

A. Scanner unit

The scanner unit in the digital copier scans images. It is composed of the optical unit and the drive unit. The optical unit performs scanning in the main scan direction with the light receiving elements (color CCD). The drive unit performs scanning in the sub scanning direction by moving the optical unit.

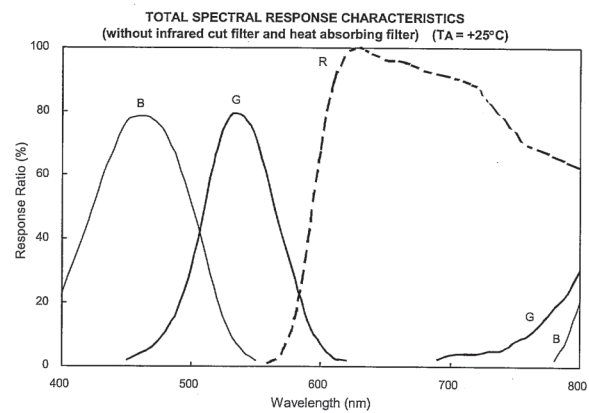
B. Optical system

Two white lamps are used as the light source. Light radiated from the light source is applied to the document on the document table. The reflected light from the document is reflected 5 times by No. 1 - No. 3 mirrors and passed through the reduction lens to form images on the light-receiving surface of 3-line CCD. The light-receiving surface of the color CCD is provided with 3 line scanning sections for RGB. Separate images scanned in each color section are overlapped to complete color scanning. (When PC scanning)

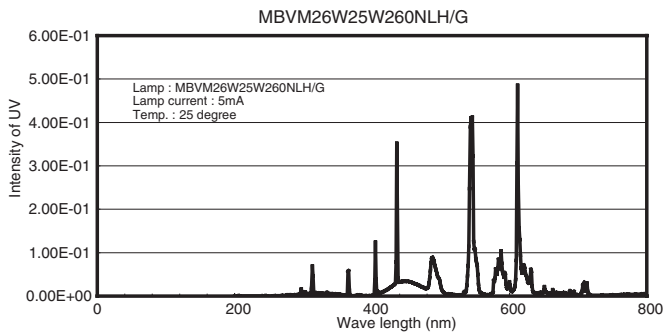
The resolution is 600dpi.

When copying, only the green component is used to print with the printer.

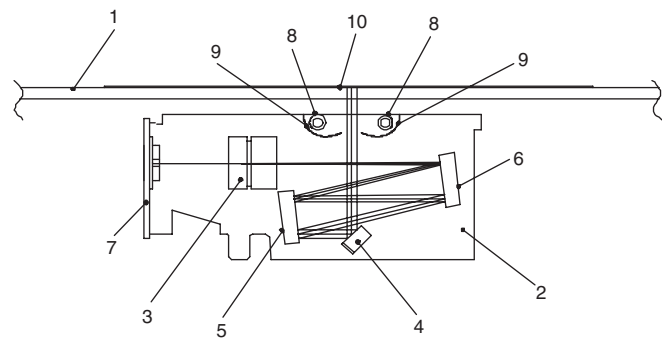
The color component for printing can be switched to red or blue by the service simulation.



(Spectrum characteristics of the color CCD)



(Spectrum characteristics of the lamp)

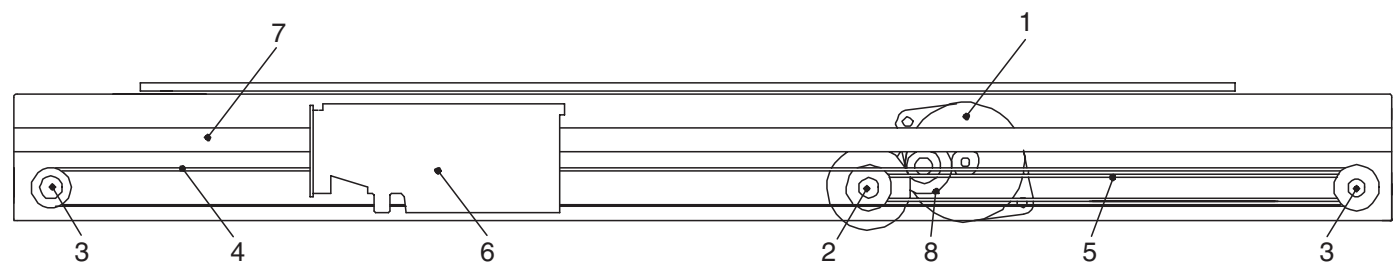


(Optical unit)

| | | | | | |
|---|-------------|---|--------------|---|-----------|
| 1 | Table glass | 2 | Optical unit | 3 | Lens |
| 4 | Mirror 1 | 5 | Mirror 2 | 6 | Mirror 3 |
| 7 | CCD PWB | 8 | Lamp | 9 | Reflector |

C. Drive system

The drive system is composed of the scanner motor, the pulley gear, the idle pulley, the idle gear, the belt 473, the belt 190, and the shaft. The motor rotation is converted into reciprocated movements of the belt 473 through the idle gear, the pulley gear, the belt 190, and the idle pulley to drive the optical unit.



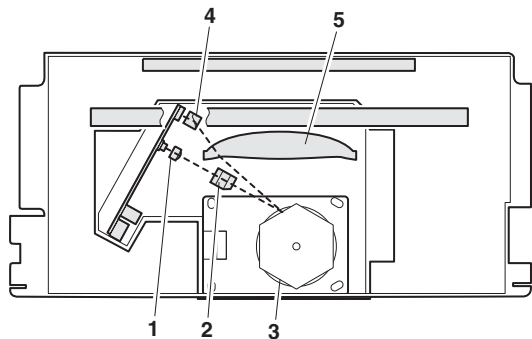
| | | | | | |
|---|---------------|---|-------------|---|--------------|
| 1 | Scanner motor | 2 | Pulley gear | 3 | Idle pulley |
| 4 | Belt 473 | 5 | Belt 190 | 6 | Optical unit |
| 7 | Shaft | 8 | Idle gear | 9 | |

3. Laser unit

The image data sent from the MCU (image process circuit) is sent to the LSU (laser unit), where it is converted into laser beams.

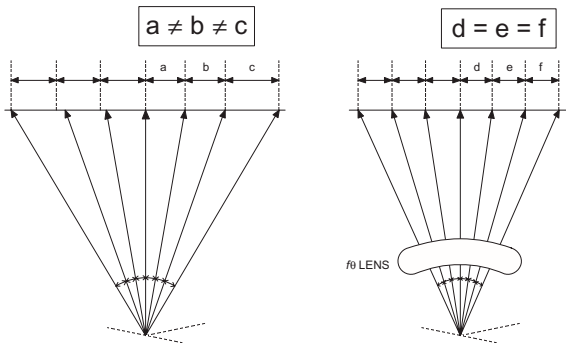
A. Basic structure

The LSU unit is the writing section of the digital optical system.
The semiconductor laser is used as the light source, and images are formed on the OPC drum by the polygon mirror and fθ lens, etc.
The laser beams are passed through the collimator lens, the cylindrical lens, the polygon mirror, the fθ lens, and the mirror to form images on the OPC drum in the main scanning direction. The laser emitting PWB is provided with the APC (auto power control) in order to eliminate fluctuations in the laser power. The BD PWB works for measurement of the laser writing start point.

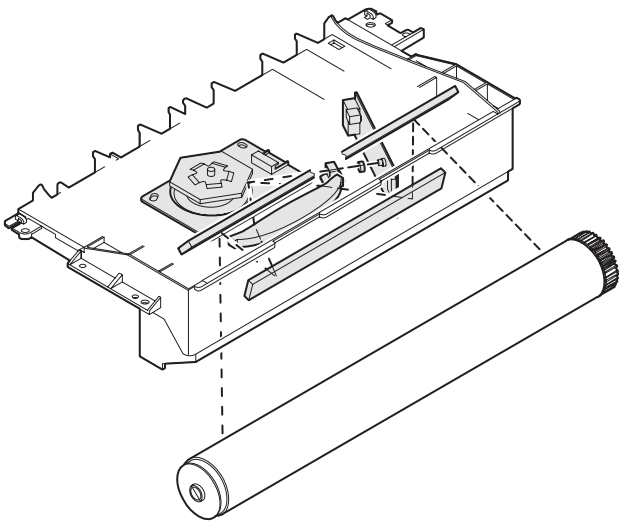


| No | Component | Function |
|----|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Semiconductor laser | Generates laser beams. |
| 2 | Collimator lens | Converges laser beams in parallel. |
| 3 | Polygon mirror, polygon motor | Reflects laser beams at a constant rpm. |
| 4 | BD (Mirror, lens, PWB) | Detects start timing of laser scanning. |
| 5 | fθ lens | Converges laser beams at a spot on the drum. Makes the laser scanning speeds at both ends of the drum same as each other. (Refer to the figure below.) |

Makes the laser scanning speeds at both ends of the drum same as each other.



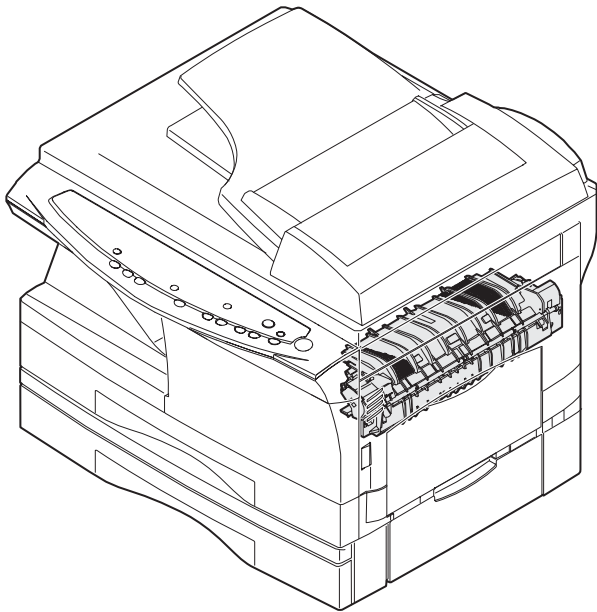
B. Laser beam path



C. Composition

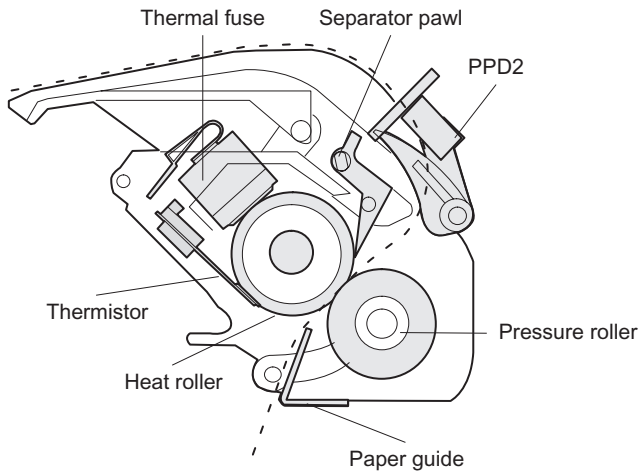
- Effective scanning width: 216mm (max.)
- Resolution: 600dpi
- Beam diameter: 75um in the main scanning direction, 80um in the sub scanning direction
- Image surface power: 0.17 ±0.01mW (Laser wavelength 770 - 795nm)
- Polygon motor section: Brushless motor 20.787rpm
- No. of mirror surfaces: 6 surfaces

4. Fuser section

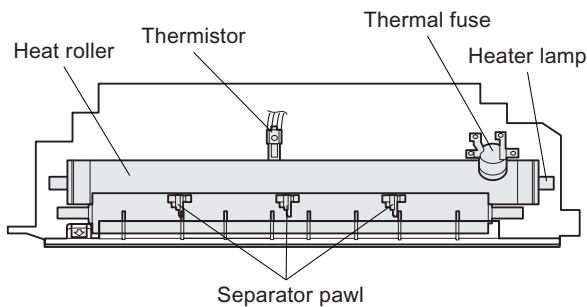


A. General description

General block diagram (cross section)



Top view



(1) Heat roller

A Teflon roller is used for the heat roller and a silicone rubber roller is used for the lower heat roller for better toner fusing performance and paper separation.

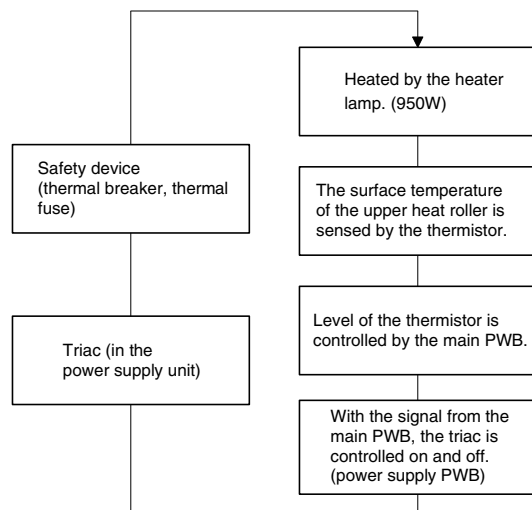
(2) Separator pawl

Three separator pawls are used on the upper heat roller. The separator pawls are Teflon coated to reduce friction with the roller and prevent a smear on the paper caused by the separator pawl.

(3) Thermal control

- 1) The heater lamp, thermistor, main PWB, DC power supply PWB, and triac within the power supply unit are used to control the temperature in the fuser unit.

To prevent against abnormally high temperature in the fuser unit, a thermal breaker and thermal fuse are used for safety purposes.



- 2) The surface temperature of the upper heat roller is set to 165 - 190°C. The surface temperature during the power save mode is set to 100°C.
- 3) The self-check function comes active when one of the following malfunctions occurs, and an "H" is displayed on the multicopy window.
 - a. When the heat roller surface temperature rises above 240°C.
 - b. When the heat roller surface temperature drops below 100°C during the copy cycle.
 - c. Open thermistor
 - d. Open thermal fuse
 - e. When the heat roller temperature does not reach 190°C within 27 second after supplying the power.

(4) Fusing resistor

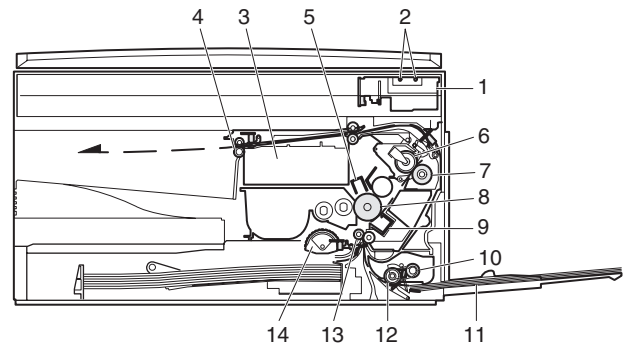
Fusing resistor

This model is provided with a fusing resistor in the fusing section to improve transfer efficiency.

Since the upper heat roller is conductive, when using copy paper that contains moisture and the distance between the transfer unit and the fusing unit is short, the transfer current may find a path to ground via the copy paper, the upper heat roller and the discharging brush.

5. Paper feed section and paper transport section

A. Paper transport path and general operations



| | | | |
|---|-------------------|----|--------------------------|
| 1 | Scanner unit | 8 | Drum |
| 2 | Copy lamp | 9 | Transfer unit |
| 3 | LSU (Laser unit) | 10 | Pickup roller |
| 4 | Paper exit roller | 11 | Manual paper feed tray |
| 5 | Main charger | 12 | Manual paper feed roller |
| 6 | Heat roller | 13 | PS roller unit |
| 7 | Pressure roller | 14 | Paper feed roller |

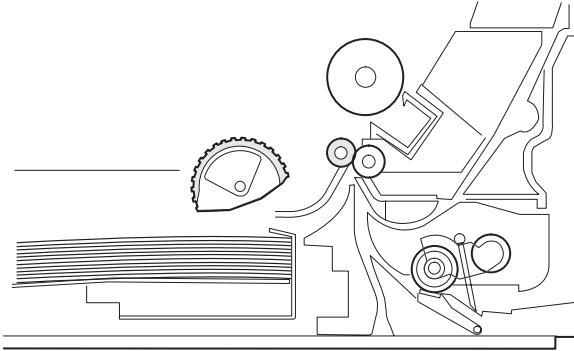
Paper feed is made in two ways; the tray paper feed and the manual paper feed. The tray is of universal-type, and has the capacity of 250 sheets.

The front loading system allows you to install or remove the tray from the front cabinet.

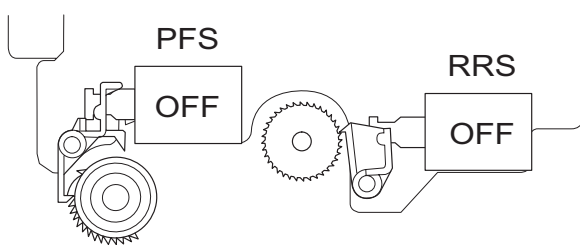
The general descriptions on the tray paper feed and the manual paper feed operation are given below.

(1) Cassette paper feed operation

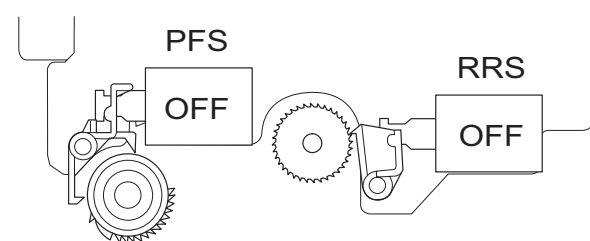
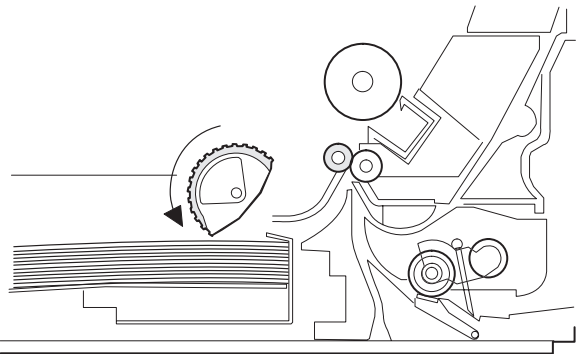
- 1) The figure below shows the positions of the pick-up roller, the paper feed clutch sleeve, and the paper feed latch in the initial state without pressing the COPY button after lighting the ready lamp.
The paper feed latch is in contact with the projection of the clutch sleeve.



- 2) When the COPY button is pressed, the main drive motor starts rotating to drive each drive gear.
The pick-up drive gear also is driven at that time. Since, however, the paper feed latch is in contact with the projection of the clutch sleeve, rotation of the drive gear is not transmitted to the pick-up roller, which does not rotate therefore.

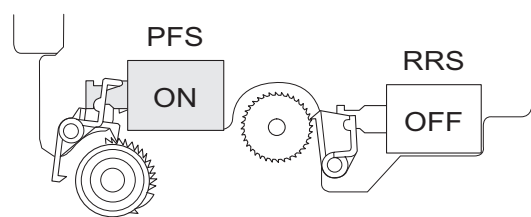
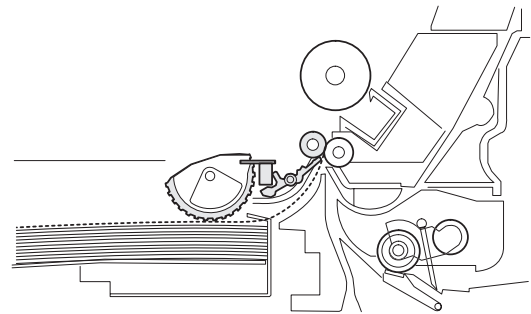


- 3) After about 0.1 sec from when the main motor start rotating, the tray paper feed solenoid (PFS) turns on for a moment.
This disengages the paper feed latch from the projection of the clutch sleeve, transmitting rotation of the pick-up drive gear to the paper feed roller shaft, rotating the pick-up roller to feed the paper.

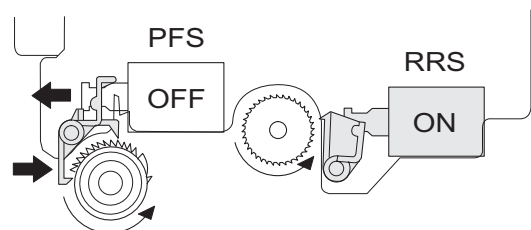
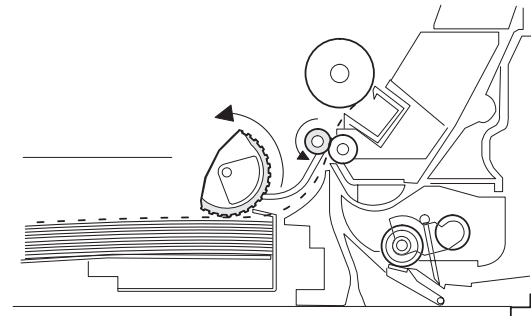


- 4) After more than half rotation of the pick-up roller, the paper feed latch is brought in contact with a notch on the clutch sleeve, stopping rotation of the pick-up roller.

- 5) At this time, the paper is fed passed the paper entry detection switch (PPD1), and detected by it. After about 0.15 sec from detection of paper by PPD1, the tray paper feed solenoid (PFS) turns on so that the clutch sleeve projection comes into contact with the paper feed latch to stop the pick-up roller. Then the pick-up roller rotates for about 0.15 sec so that the lead edge of the paper is evenly pressed on the resist roller, preventing against skew feeding.



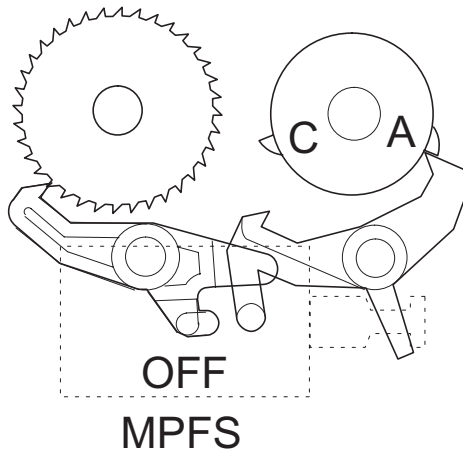
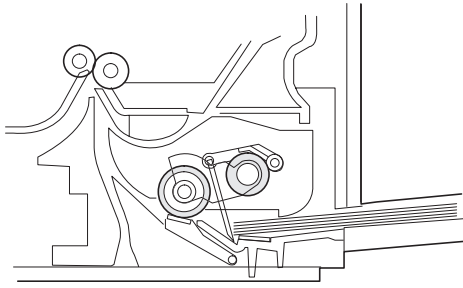
- 6) To release the resist roller, the tray paper feed solenoid and the resist solenoid are turned on by the paper start signal to disengage the resist start latch from the clutch sleeve, transmitting rotation of the resist drive gear to the resist roller shaft. Thus the paper is transported by the resist roller.
- 7) After the resist roller starts rotating, the paper is passed through the pre-transfer guide to the transfer section. Images are transferred on the paper, which is separated from the OPC drum by the drum curve and the separation section.



- 8) The paper separated from the drum is passed through the fusing paper guide, the heat roller (fusing section), POD (paper out detector) to the copy tray.

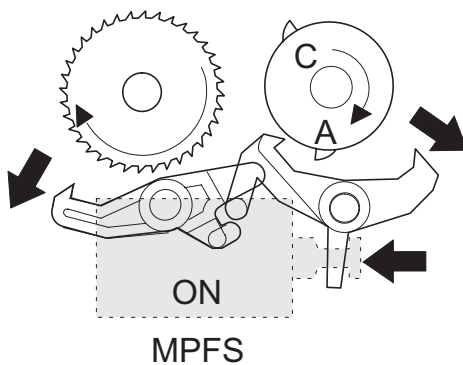
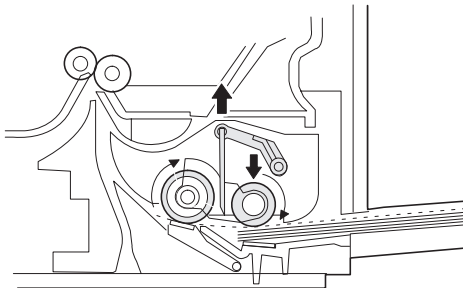
(2) Manual multi paper feed operation

- 1) Before paper feed operation, the manual paper feed solenoid (MPFS) is turned OFF as shown in the figure below.

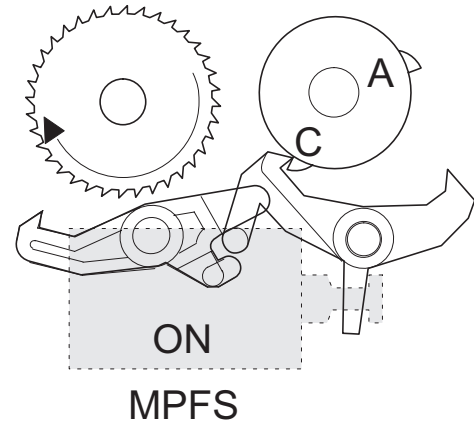
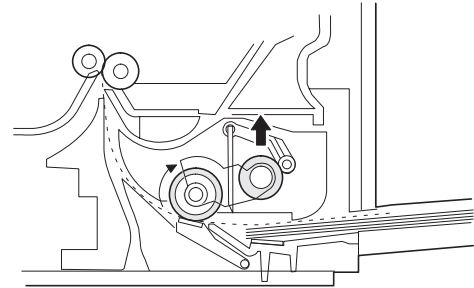


- 2) When the PRINT button is pressed, the manual paper feed solenoid (MPFS) turns on to disengage the manual paper feed latch.

A from the manual paper feed clutch sleeve A, rotating the manual paper feed roller and the manual take-up roller. At the same time, the manual paper feed stopper opens and the manual take-up roller is pressed to the surface of the paper to start paper feeding.



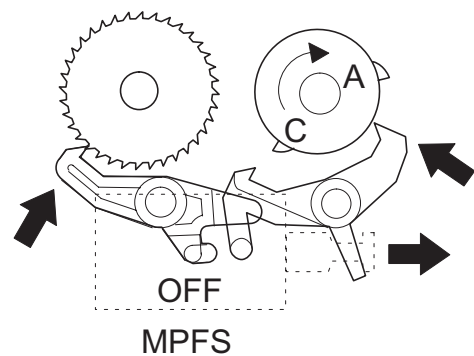
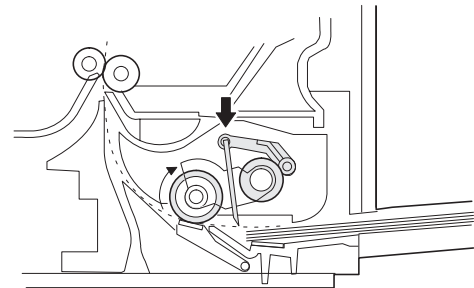
- 3) When pawl C of the manual paper feed clutch sleeve is engaged with the manual feed latch, the manual feed stopper falls and the manual take-up roller rises. At that time, the manual paper feed roller is rotating.



- 4) The lead edge of the transported paper is pressed on the resist roller by the transport roller. Then the paper is stopped temporarily to allow synchronization with the lead edge of the image on the OPC drum.

From this point, the operation is the same as the paper feed operation from the tray. (Refer to A-5 - 8.)

- 5) The solenoid turns off to close the gate and return to the initial state.



(3) Conditions of occurrence of paper misfeed

a. When the power is turned on:

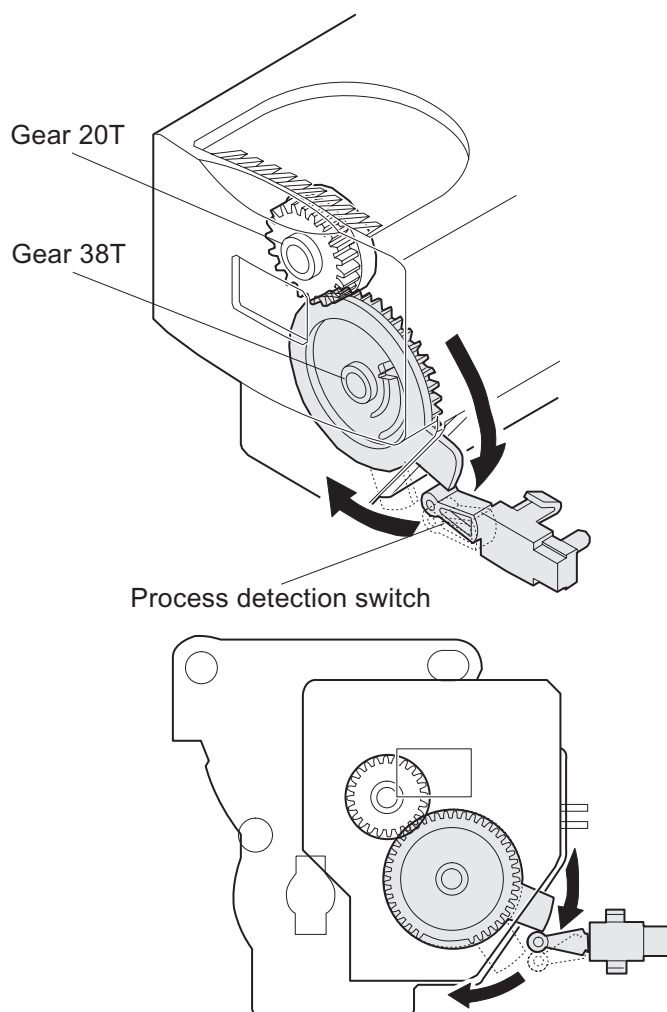
PPD or POD is ON when the power is turned on.

b. Copy operation

| | | |
|---|----------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| a | PPD1 jam | PPD1 does not turn off within 4 sec after turning on the resist roller. |
| b | PPD2 jam | PPD2 is off immediately after turning on the resist roller. PPD2 does not turn off within 1.2 sec after turning off the resist roller. |
| c | POD jam | POD does not turn on within 2.9 sec after turning on the resist roller. POD does not turn off within 1.5 sec - 2.7 sec after turning off PPD2. |

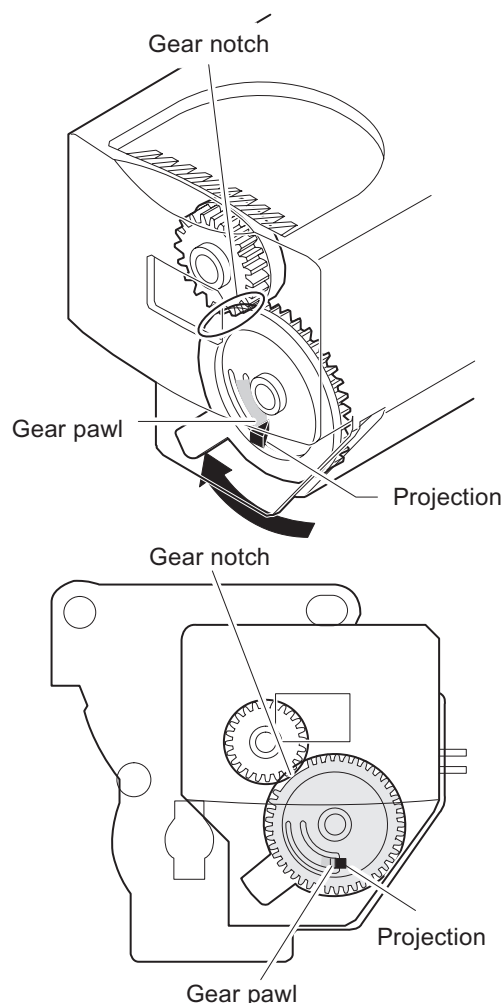
6. Process unit new drum detection mechanism

- 1) When the power is turned on, the detection gear 38T is rotated in the arrow direction by the detection gear 20T to push the micro-switch (process detection switch) installed to the machine sensor cover, making a judgement as a new drum.



- 2) When the detection gear 38T turns one rotation, there is no gear any more and it stops.

The latch section of the 38T gear is latched and fixed with the projection of the process cover.

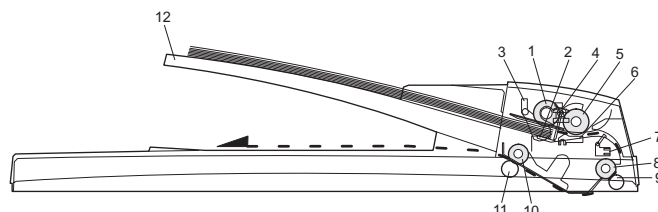


7. SPF section

A. Outline

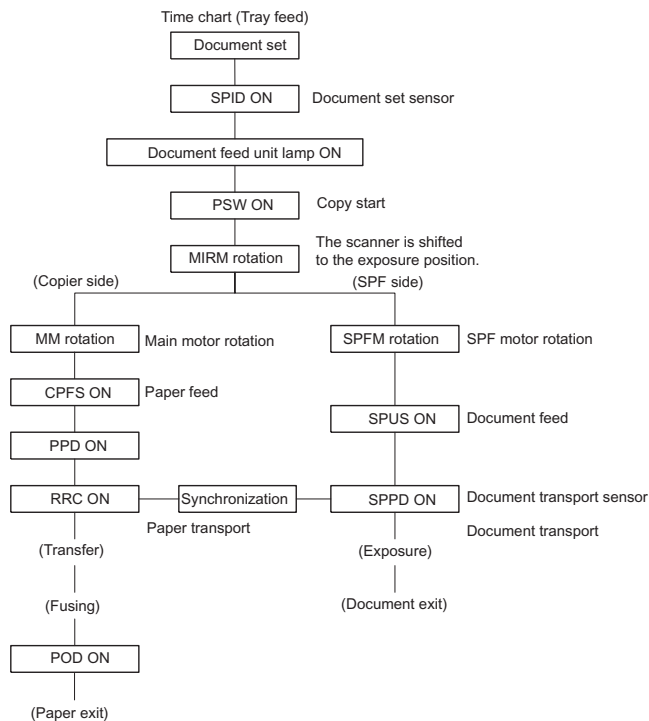
The SPF (Single Path Feeder) is installed to the AL-1225 as a standard provision, and it automatically copies up to 30 sheets of documents of a same size. (Only one set of copies)

B. Document transport path and basic composition

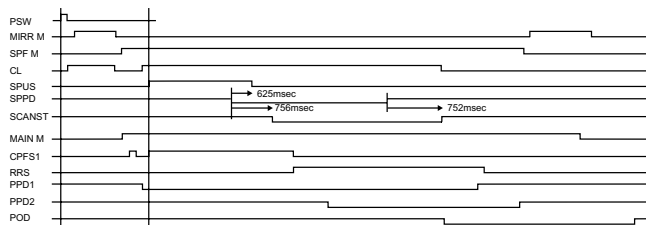


| | | | |
|----|----------------------------|----|----------------------------------|
| 1 | Pickup roller | 2 | Sheet of document for paper feed |
| 3 | Set detection ACT | 4 | Paper stopper |
| 5 | Document feed roller | 6 | Separation sheet |
| 7 | Paper entry sensor | 8 | PS roller D |
| 9 | Transport follower roller | 10 | Paper exit roller |
| 11 | Paper exit follower roller | 12 | Document tray |

C. Operational descriptions



In the zooming mode, the magnification ratio in the sub scanning direction (paper transport direction) is adjusted by changing the document transport speed.



D. Cases where a document jam is caused

- 1) When SPPD is ON (document remaining) when the power is turned on.
- 2) When SPPD is not turned ON within about 1.5 sec (at 100% copy) after starting the document feed operation.
- 3) When SPPD is not turned on within about 4.7 sec (at 100% copy) after turning on SPPD.
- 4) When the SPF document jam release door or the OC cover is opened during document transport (SPF motor rotating).

[8] DISASSEMBLY AND ASSEMBLY

Before disassembly, be sure to disconnect the power cord for safety.

1. Do not disconnect or connect the connector and the harness during the machine is powered. Especially be careful not to disconnect or connect the harness between the MCU PWB and the LSU (MCU PWB: CN119) during the machine is powered. (If it is disconnected or connected during the machine is powered, the IC inside the LSU will be destroyed.)
2. To disconnect the harness after turning on the power, be sure to turn off the power and wait for at least 10 sec before disconnection. (Note that a voltage still remains immediately after turning off the power.)

The disassembly and assembly procedures are described for the following sections:

1. High voltage section
2. Operation panel section
3. Optical section
4. Fusing section
5. Tray paper feed/transport section
6. Manual paper feed section
7. Rear frame section
8. Power section
9. SPF section

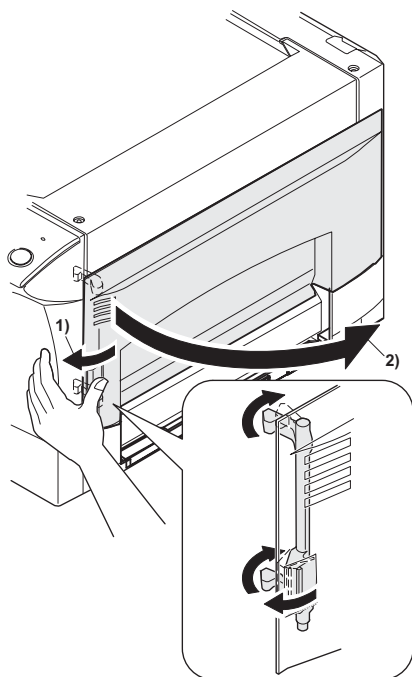
1. High voltage section

A. List

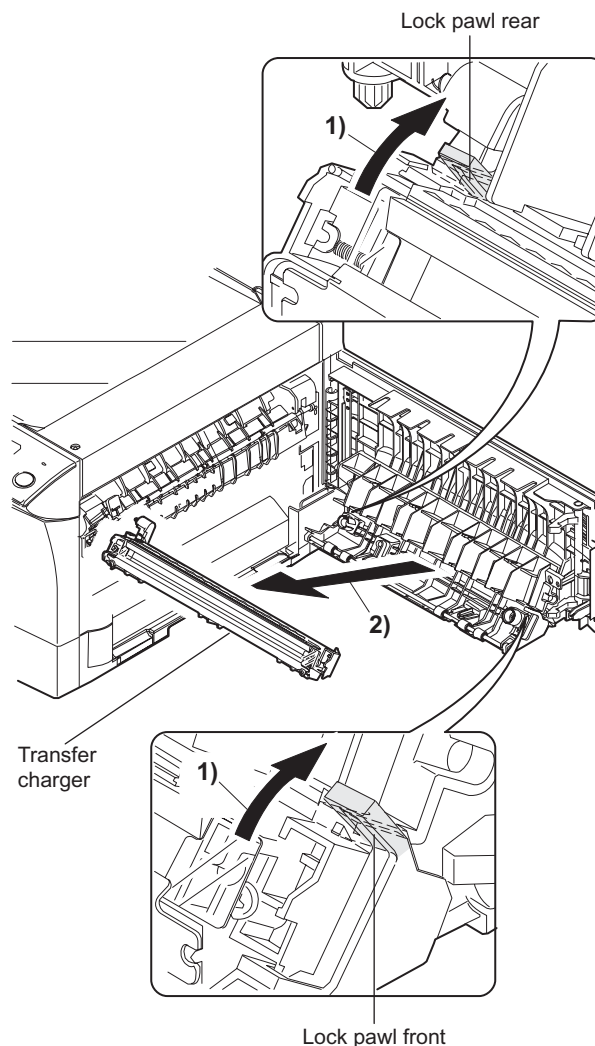
| No. | Part name Ref. |
|-----|-----------------------|
| 1 | Transfer charger unit |
| 2 | Charger wire |

B. Disassembly procedure

- 1) Press the side cover open/close button and open the side cover.



- 2) Push up the lock pawls (2 positions) of the side cover, and remove the transfer charger.

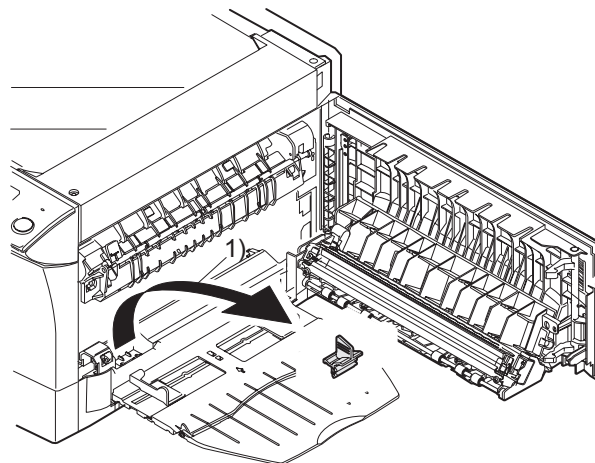


C. Assembly procedure

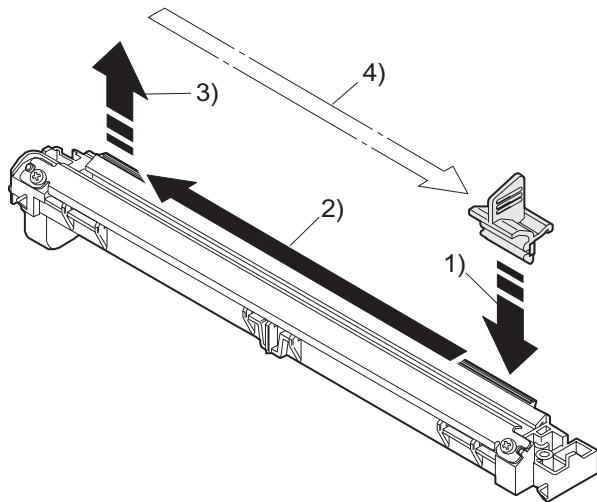
For assembly, reverse the disassembly procedure.

D. Charger wire cleaning

- 1) Remove the charger cleaner from the manual paper feed unit.



- 2) Set the charger cleaner to the transfer unit, and move it reciprocally a few times in the direction of the arrow shown in the figure below.



E. Charger wire replacement

- 1) Remove the TC cover and remove the screw.
 - 2) Remove the spring and remove the charger wire.
 - 3) Install a new charger wire by reversing the procedures (1) and (2).
At that time, be careful of the following items.
- The rest of the charger wire must be within 1.5mm. Refer to Fig.1
 - The spring hook section (charger wire winding section) must be in the range of the projection section.
 - Be careful not to twist the charger wire.

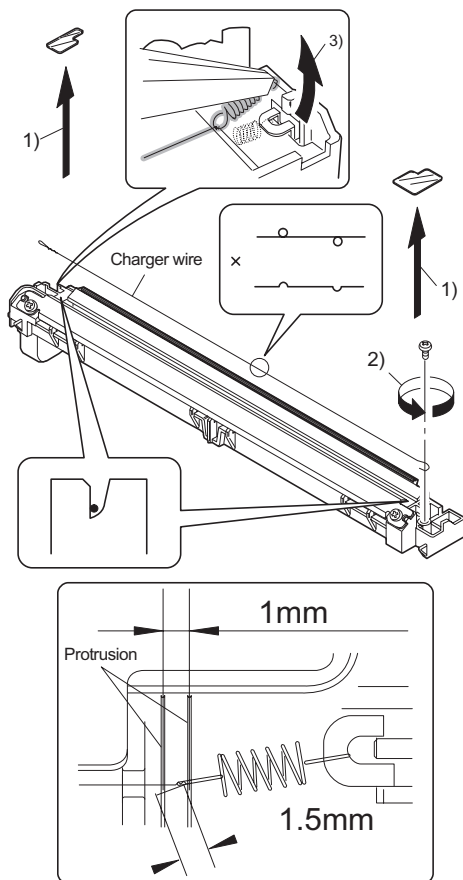


Fig.1

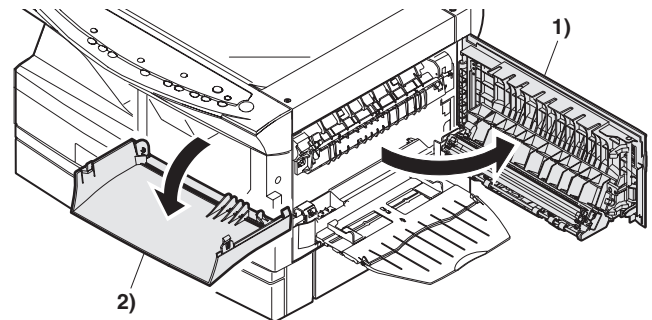
2. Operation panel section

A. List

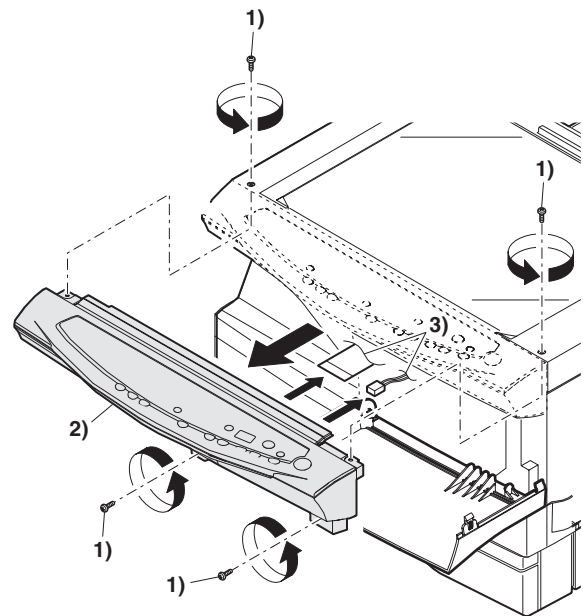
| No. | Part name | Ref. |
|-----|----------------------|------|
| 1 | Operation panel unit | |
| 2 | Operation PWB | |

B. Disassembly procedure

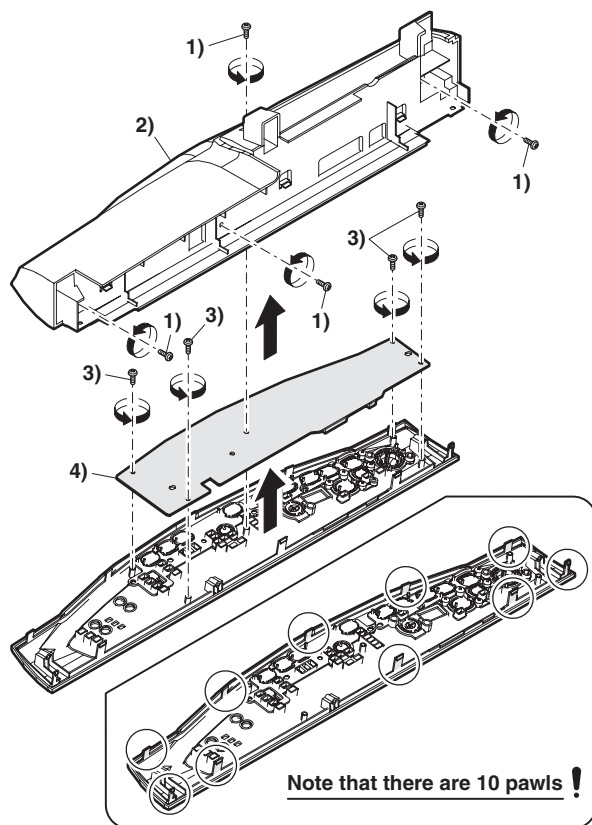
- 1) Open the side door, and Open the front cover.



- 2) Remove the screws (4 pcs.), the harness, and the operation panel unit.



- 3) Remove four screws, and remove the operation cabinet.
- 4) Remove four screws, and remove the operation PWB.



C. Assembly procedure

For assembly, reverse the disassembly procedure

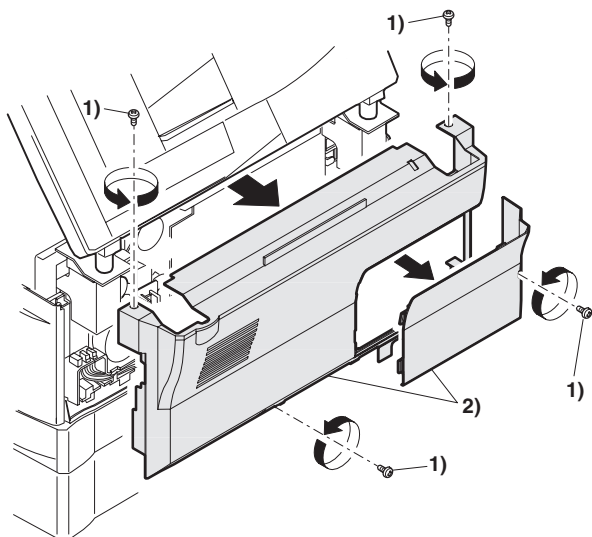
3. Optical section

A. List

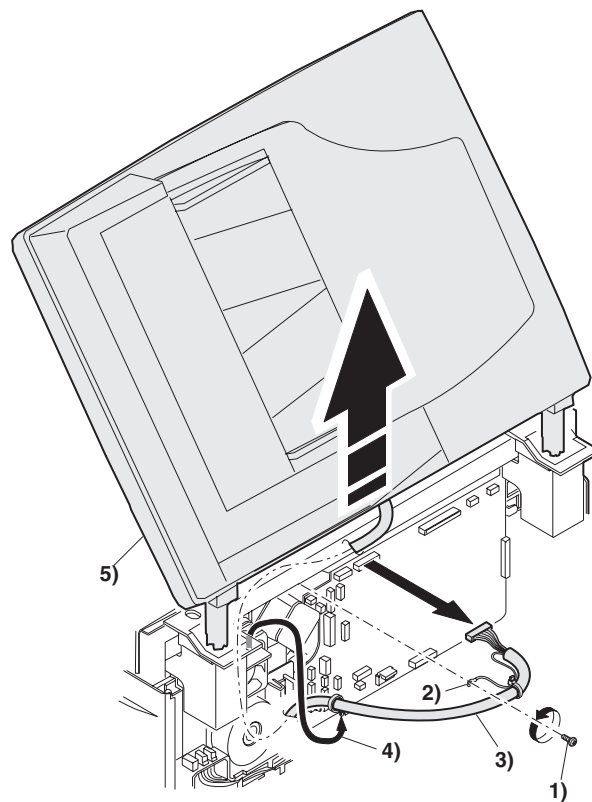
| NO. | Part name | Ref. |
|-----|----------------|------|
| 1 | Copy lamp unit | |
| 2 | Copy lamp | |
| 3 | Lens unit | |

B. Disassembly procedure

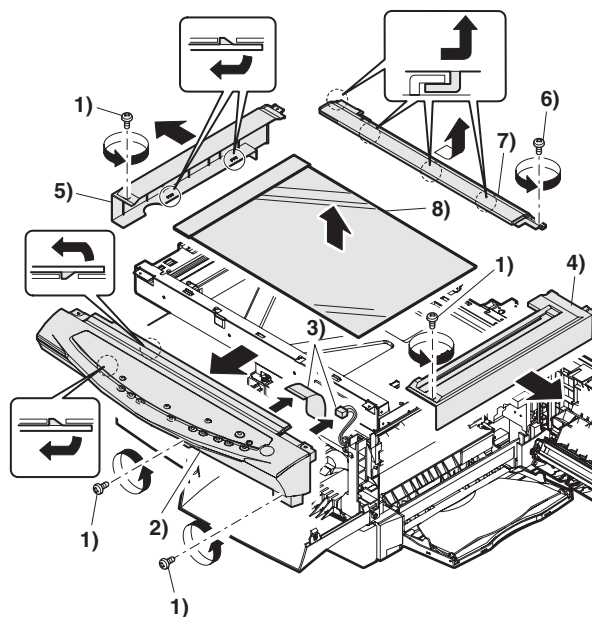
- 1) Remove four screws, and remove the rear cabinet and the rear cabinet cover.



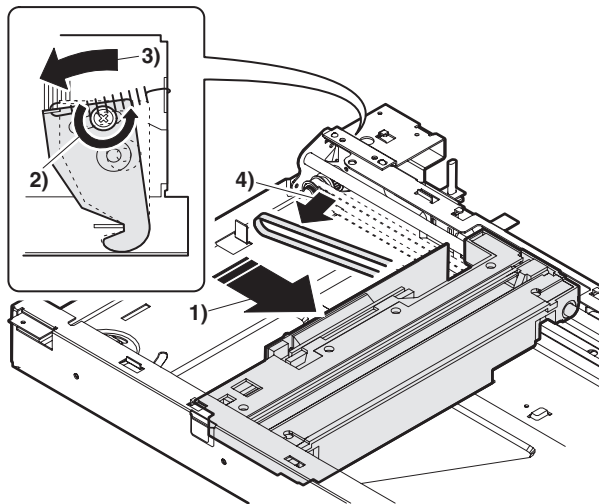
- 2) Remove the connector and the clamp, and remove the SPF unit.



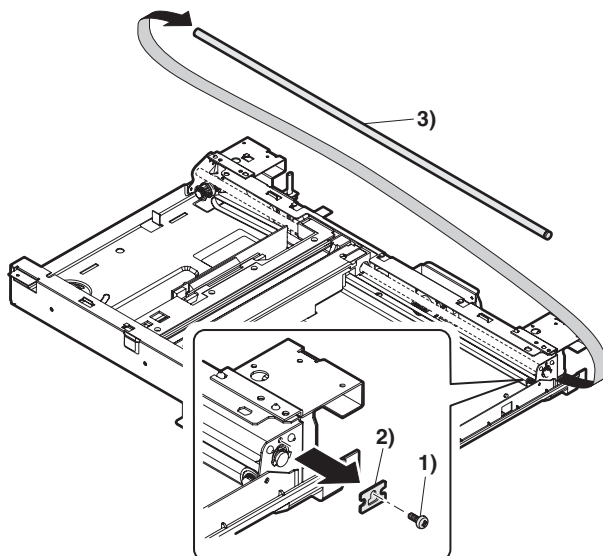
- 3) Remove the four screws, remove the operation unit, and disconnect the connector.
- 4) Remove the right cabinet.
- 5) Remove the left cabinet.
- 6) Remove the screw, and remove the rear cover.
- 7) Remove the table glass.



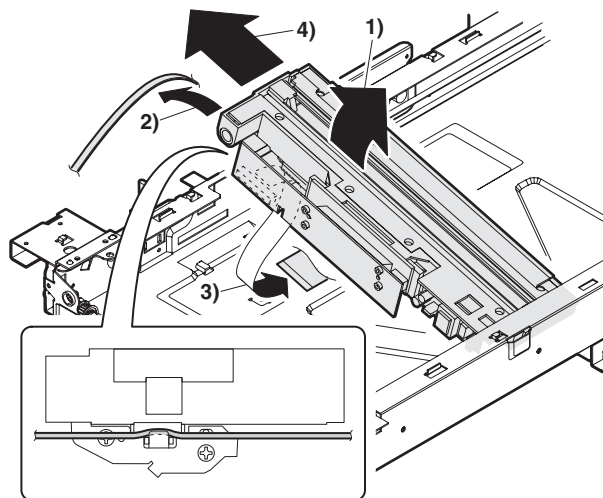
- 8) Move the carriage to the position indicated on the figure.
- 9) Loosen the screw which is fixing the tension plate.
- 10) Move the tension plate in the arrow direction to release the tension, and remove the belt.



- 11) Remove the screw, and remove the rod stopper.
- 12) Remove the rod.



- 13) Lift the rear side of the carriage, remove the belt and the connector, and remove the carriage.

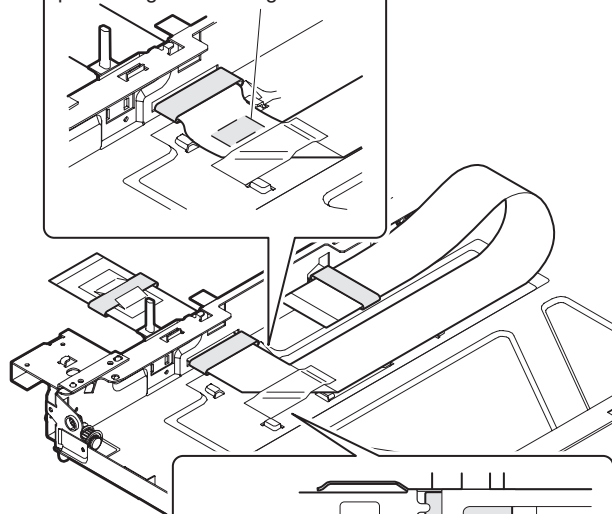


C. Assembly procedure

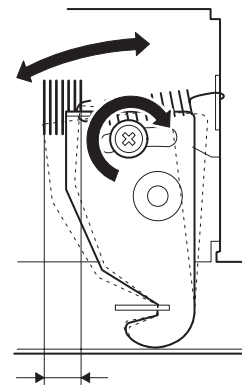
CCD core

- 1) Pass the core through the CCD-MCU harness.
- 2) Insert the CCD-MCU harness into the CCD PWB connector of the carriage unit.
- 3) Move the core which was passed through the CCD-MCU harness near the CCD PWB connector as shown in the figure below, and fix it with a filament tape (19mm wide, 40mm long). For the attachment reference, refer to the figure below. Clean and remove oil from the attachment section.
- 4) Attach the CCD-MCU harness to the duplex tape on the back of the carriage unit.
- 5) Attach the PWB holder to the position specified in the figure below.
- 6) Pass the core through the FFC and the PWB holder, and fix the core.

Note: Attach the FFC to the base plate securely with duplex tape to prevent against coming loose.



Note: Attach the FFC to fit with the marking line. Marking line



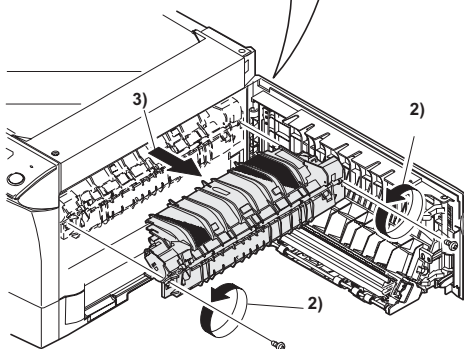
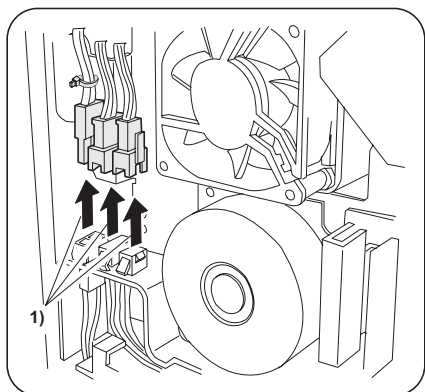
4. Fusing section

A. List

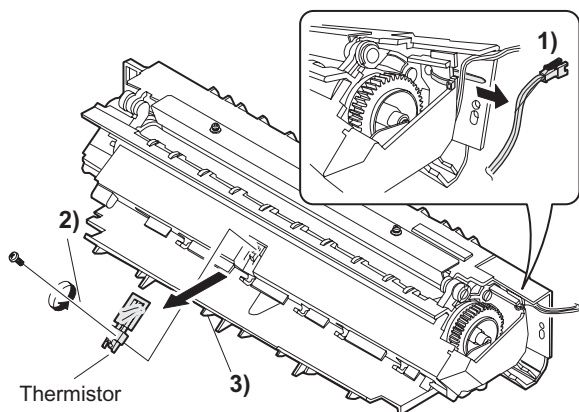
| No. | Part name Ref. |
|-----|-----------------|
| 1 | Thermistor |
| 2 | PPD2 sensor |
| 3 | Heater lamp |
| 4 | Pressure roller |
| 5 | Heat roller |

B. Disassembly procedure

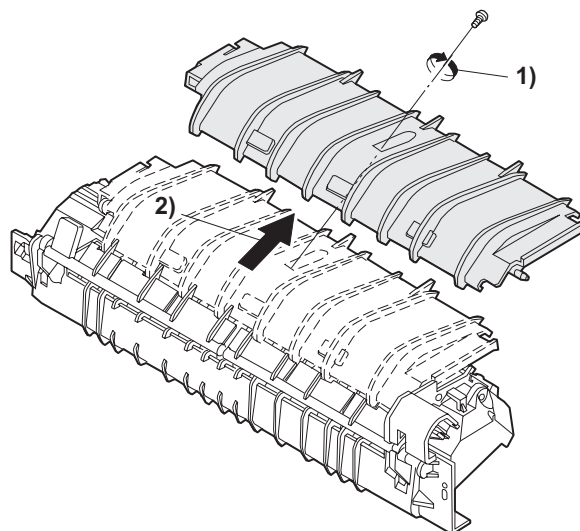
- 1) Remove the connectors (3 pcs.) of the rear cabinet.
- 2) Open the side cover, remove two screws, and remove the fusing unit.



- 3) Cut the binding band, remove the screw, and remove the thermistor.

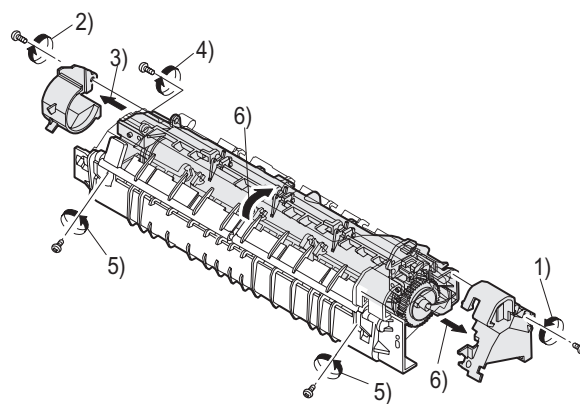


- 4) Remove the screw and remove the U-turn guide.

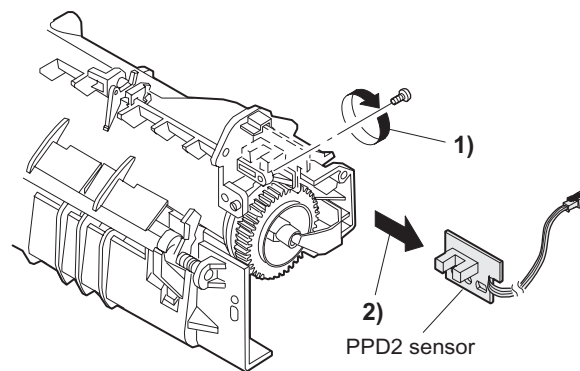


Pressure roller section disassembly

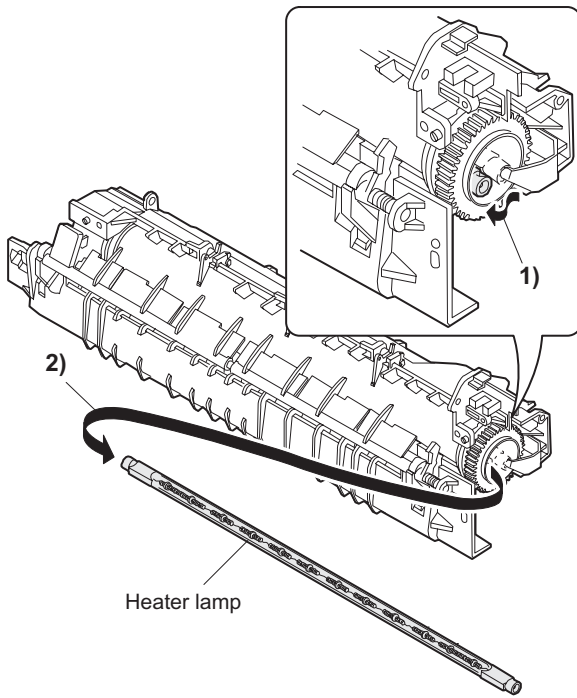
- 5) Remove the three screws, remove the fusing cover lower on the right side, and open the heat roller section.



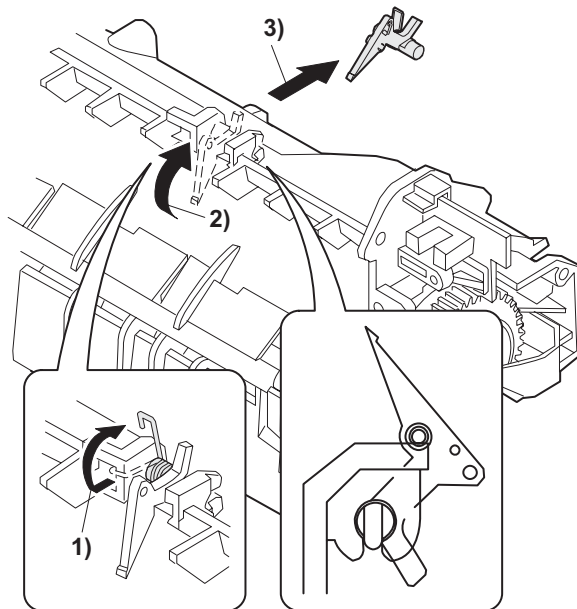
- 6) Remove the screw and remove the PPD2 sensor.



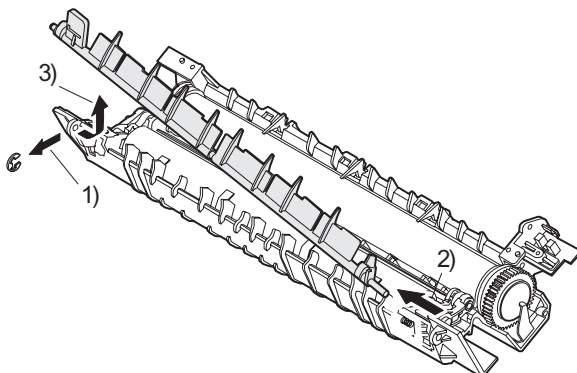
7) Remove the plate spring on the right and remove the heater lamp.



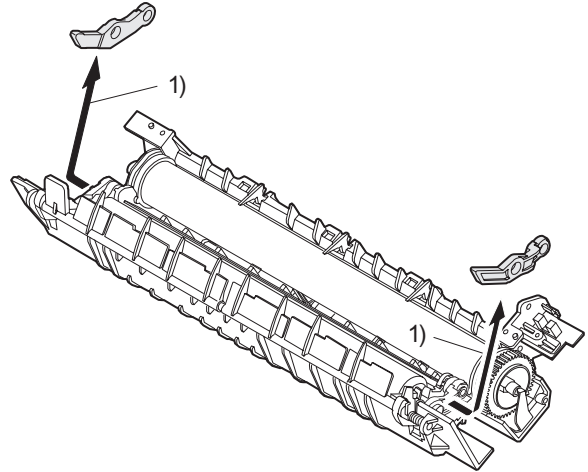
8) Remove the spring and remove the separation pawls (3 pcs.).



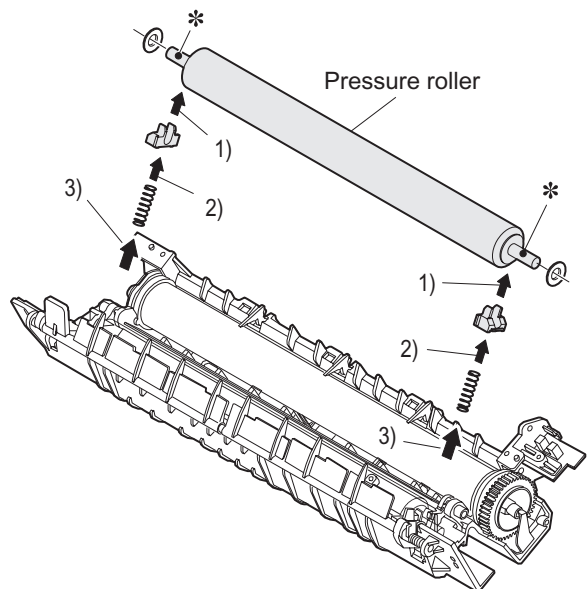
9) Remove the E-ring and remove the reverse gate.



10) Remove the pressure release levers on the right and the left sides.



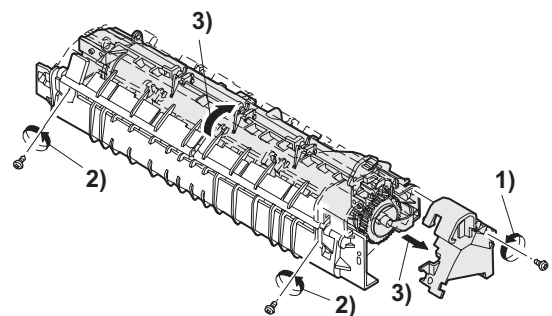
11) Remove the pressure roller, the pressure bearing, and the spring.
Note: Apply grease to the sections specified with an asterisk (*).



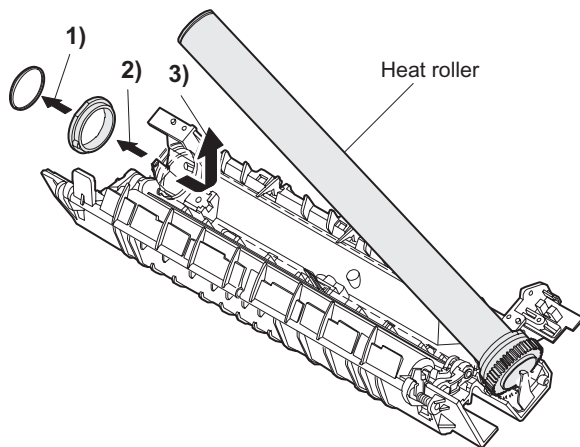
Heat roller disassembly

(Continued from procedure (4).)

5) Remove screws, remove the fusing cover, and open the heat roller section.

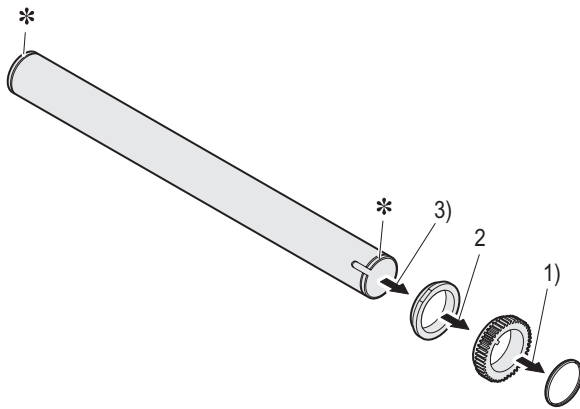


- 6) Remove the C-ring and the fusing bearing, and remove the heat roller.

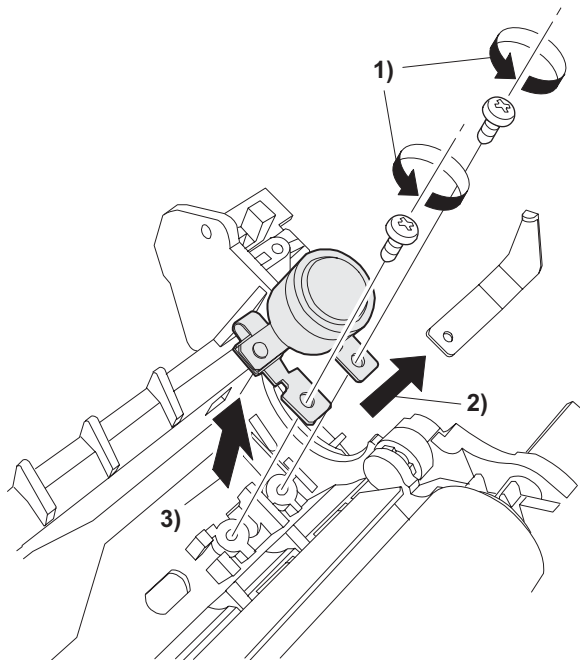


- 7) Remove the parts from the heat roller.

Note: Apply grease to the sections specified with *.



- 8) Remove two screws and remove the thermo unit.



C. Assembly procedure

For assembly, reverse the disassembly procedure.

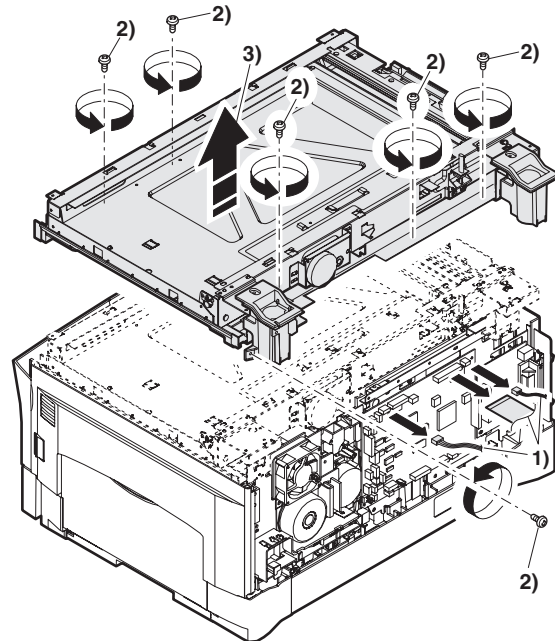
5. Tray paper feed/transport section

A. List

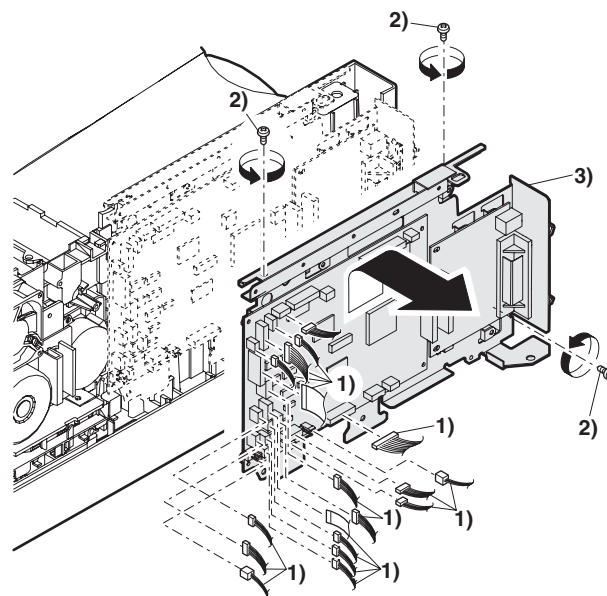
| No. | Part name | Ref. |
|-----|-------------------------|------|
| 1 | PPD1 sensor PWB | |
| 2 | LSU unit | |
| 3 | Intermediate frame unit | |
| 4 | Paper feed roller | |

B. Disassembly procedure

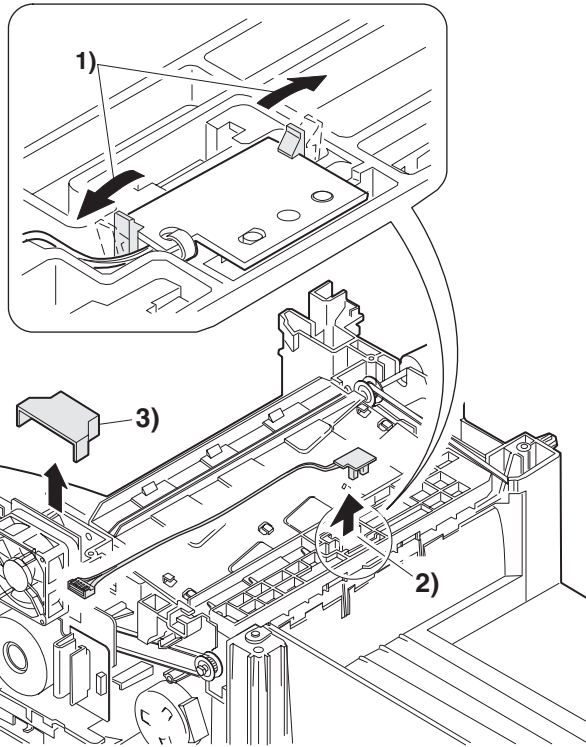
- 1) Remove two screws, and remove the hinge guide R.
- 2) Disconnect three positions of the connectors.
- 3) Remove six screws, and remove the scanner unit.
- 4) Remove the fan duct.



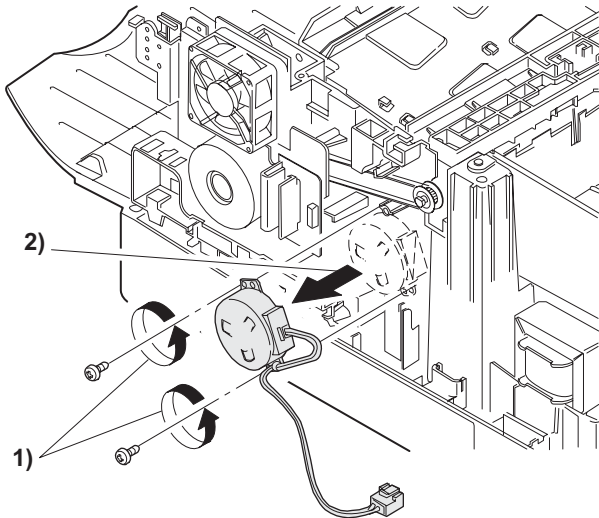
- 4) Remove each connector and three screws, and remove the MCU PWB.



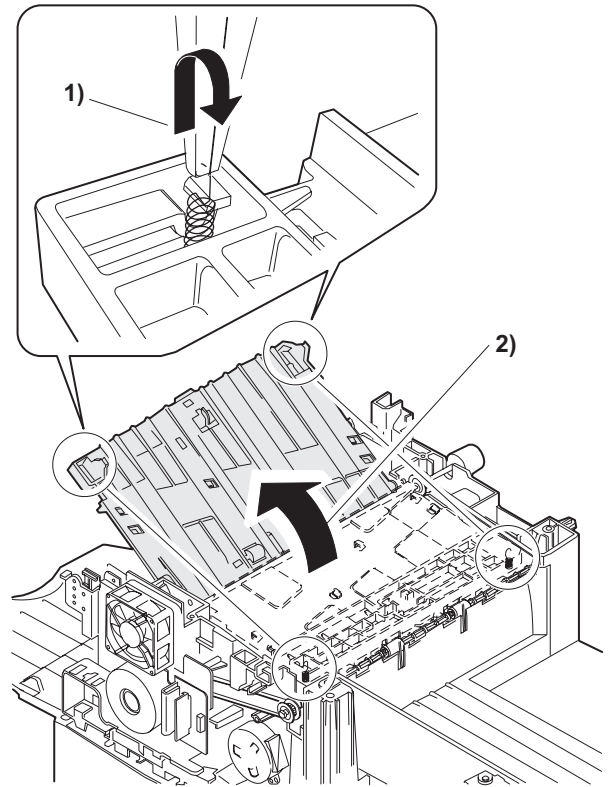
- 5) Remove the PWB insulation mylar and remove the paper transport detection sensor (PPD2).



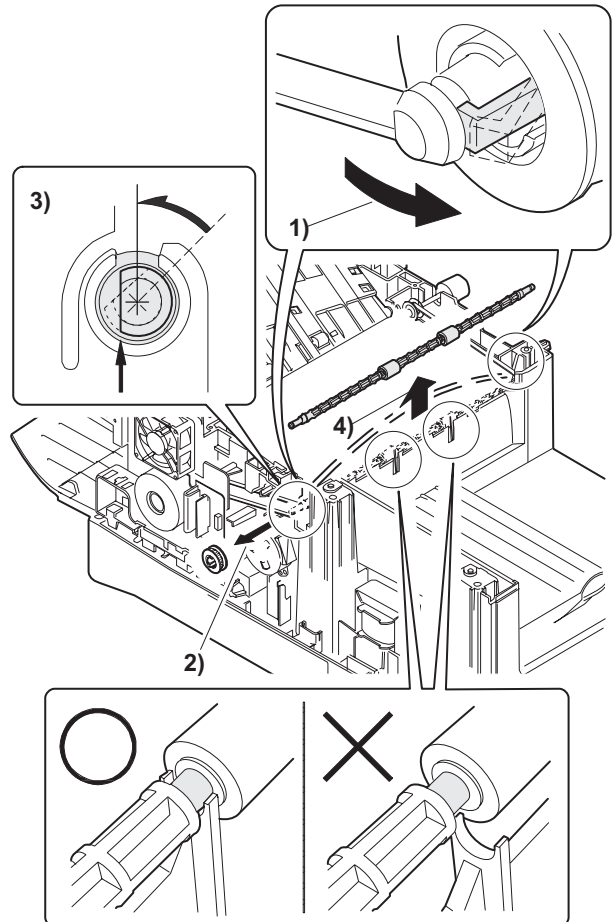
- 6) Remove two screws and remove the toner motor.



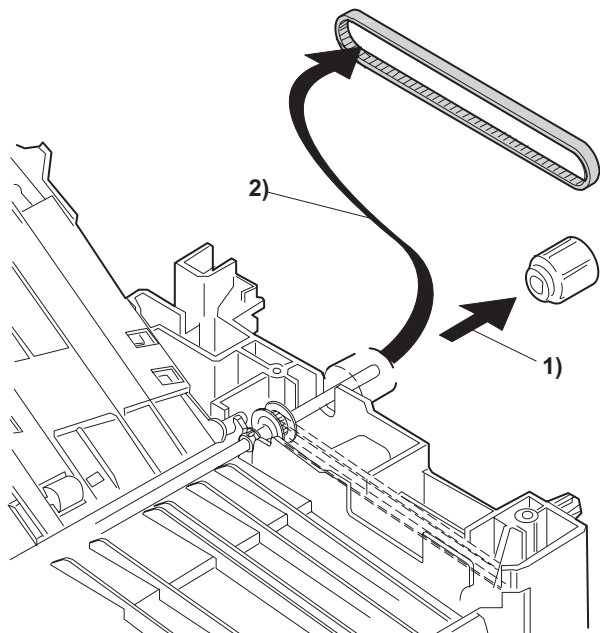
- 7) Remove two springs and open the intermediate frame unit.



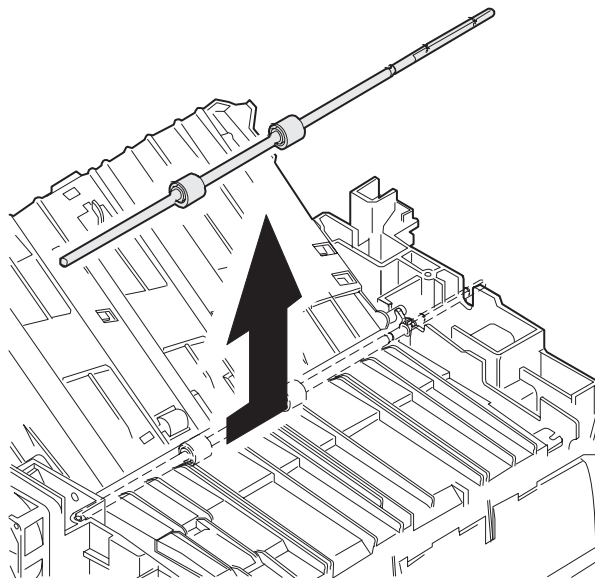
- 8) Remove the pulleys on the both sides and remove the paper exit roller.



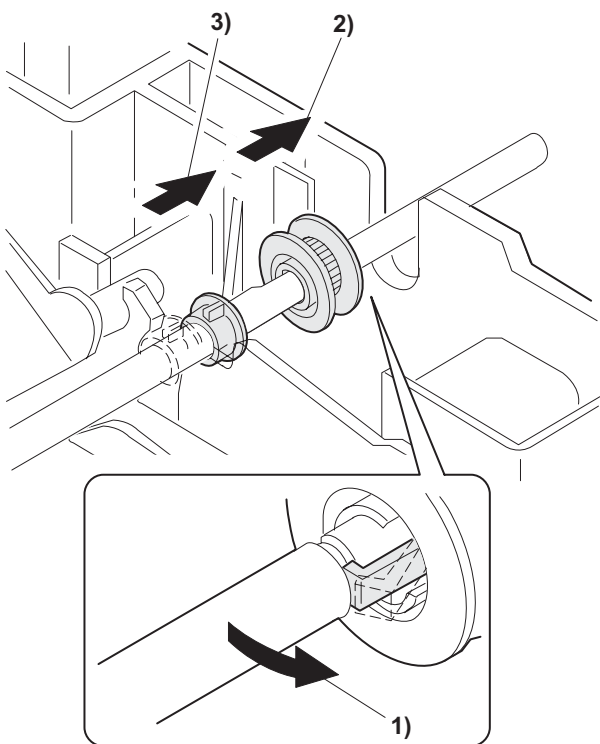
9) Pull out the paper exit roller knob and remove the belt.



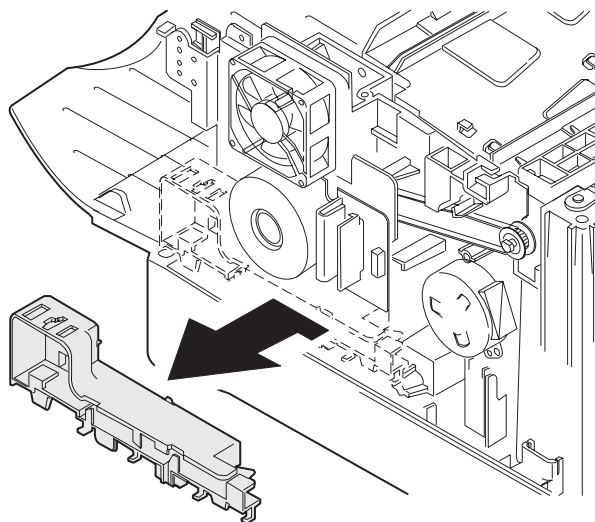
11) Remove the paper exit roller.



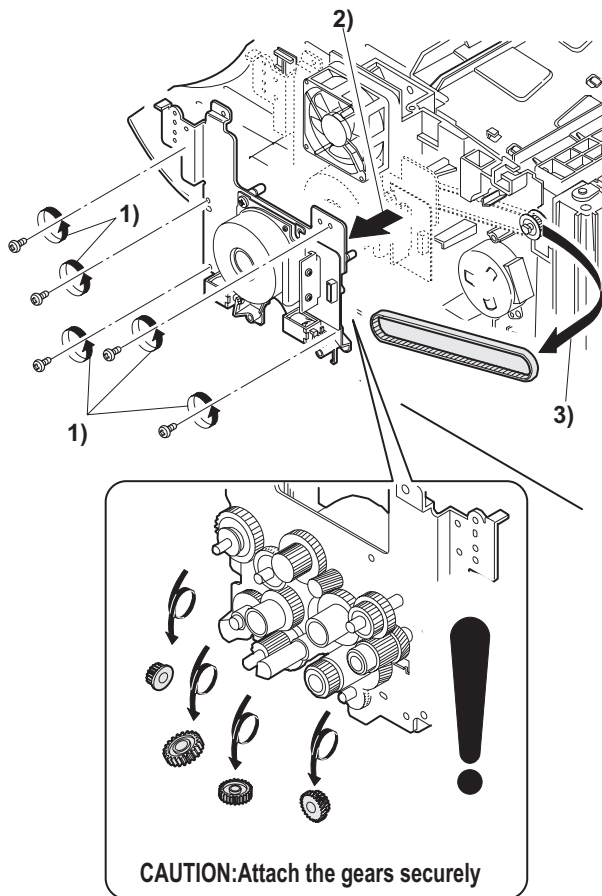
10) Release the belt pulley (a) lock and remove the belt pulley bearing.



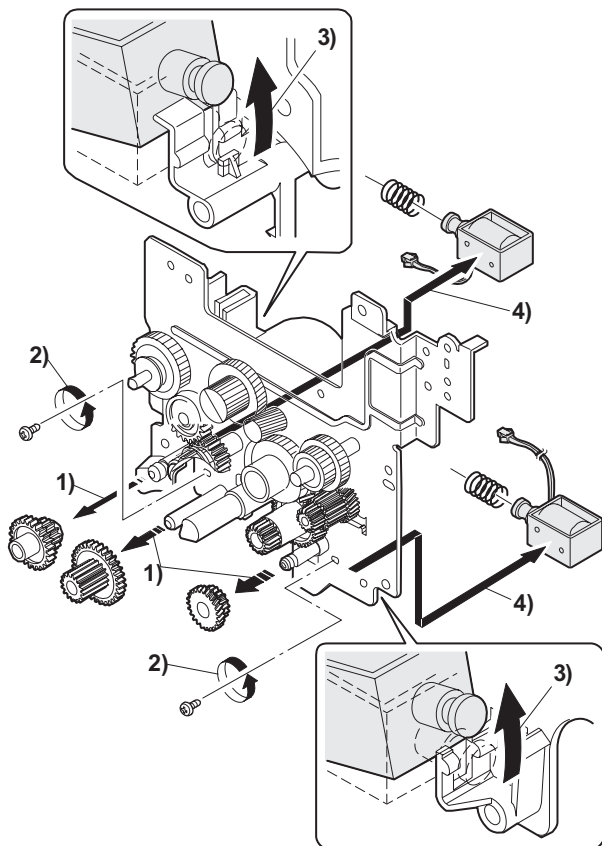
12) Remove the harness guide.



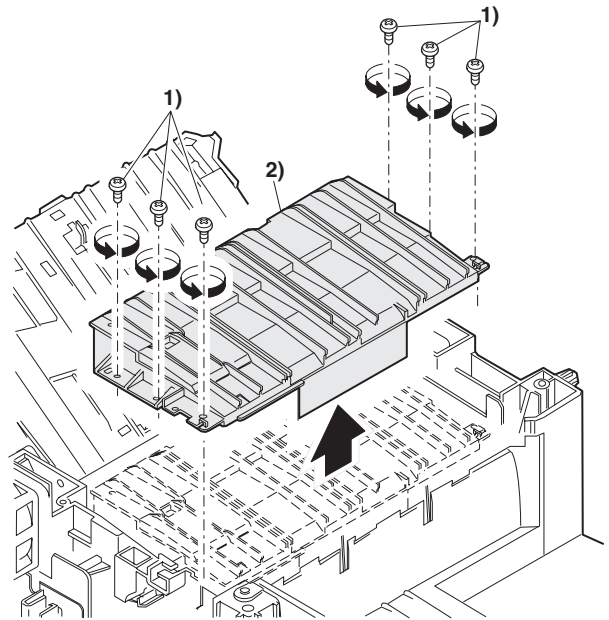
13) Remove five screws and remove the main drive plate and the belt.



14) Remove the parts as shown below, and remove the pressure release solenoid and the paper feed solenoid.



15) Remove six screws and remove the LSU unit.



The scan inclination classification is indicated on the right or the left of the LSU production number label according to the classification.

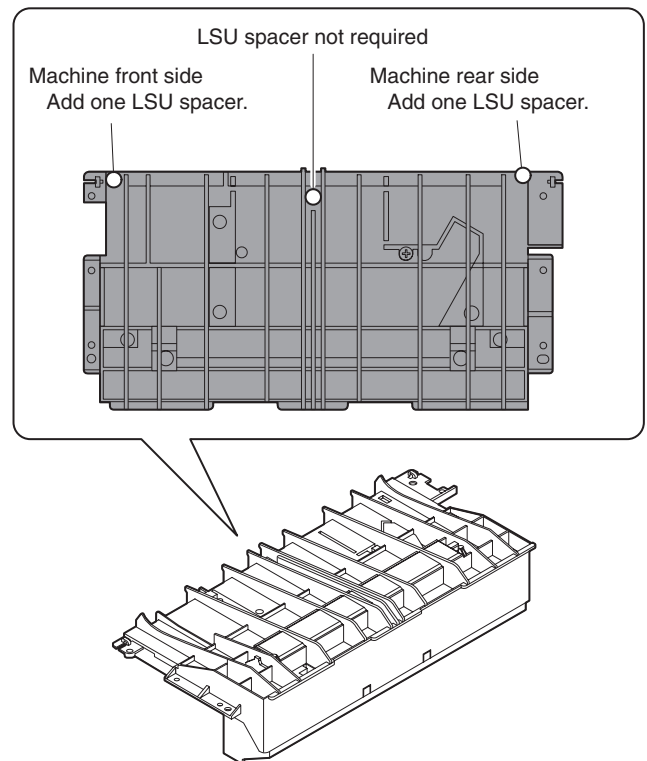
When replacing the LSU, add the spacer according to the scan inclination classification. (The spacer is packed together with every LSU.)

Scan inclination classification check

Scan inclination classification 1: $+0.26 - +0.5$ (White marking on the right of the production number label)

Scan inclination classification 2: $-0.25 - +0.25$ (White marking)

Scan inclination classification 3: $-0.5 - -0.26$ (White marking on the left of the production number label)



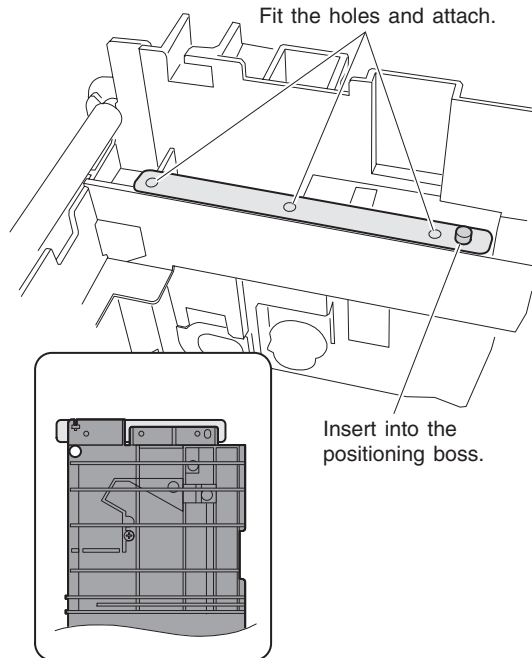
Addition of the spacer

Scan inclination classification 1: Add the LSU spacer to the rear side of the machine.

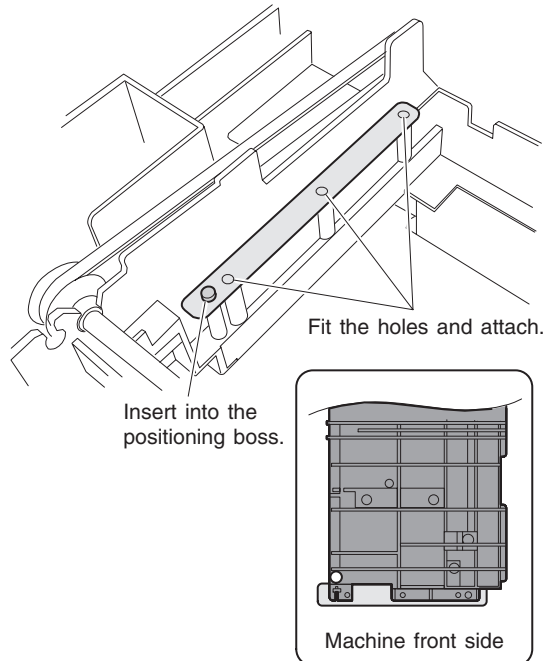
Scan inclination classification 2: No need to add the spacer.

Scan inclination classification 3: Add the LSU spacer to the front side of the machine.

<Machine rear side>



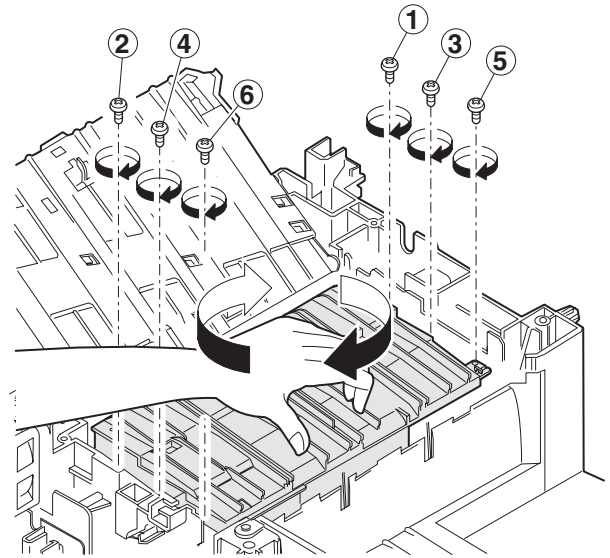
<Machine front side>



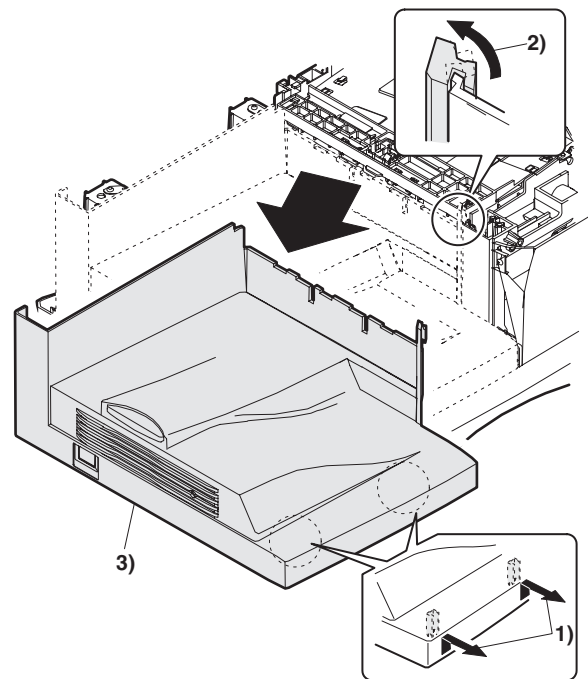
[Note for assembling the LSU]

When installing the LSU, turn the LSU clockwise and fix with screws in order to provide an attachment backlash in the proper direction.

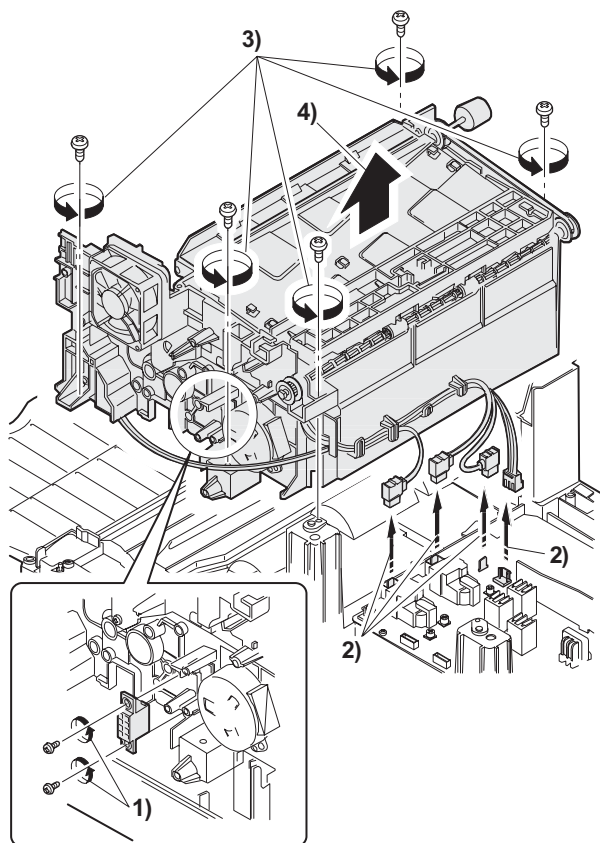
Observe the following sequence of fixing screws.



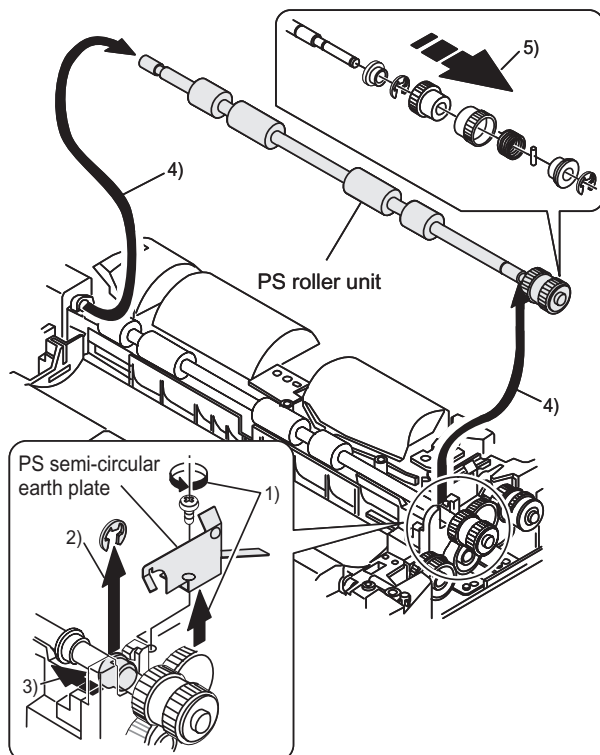
16) Remove each pawl, and remove the paper exit tray.



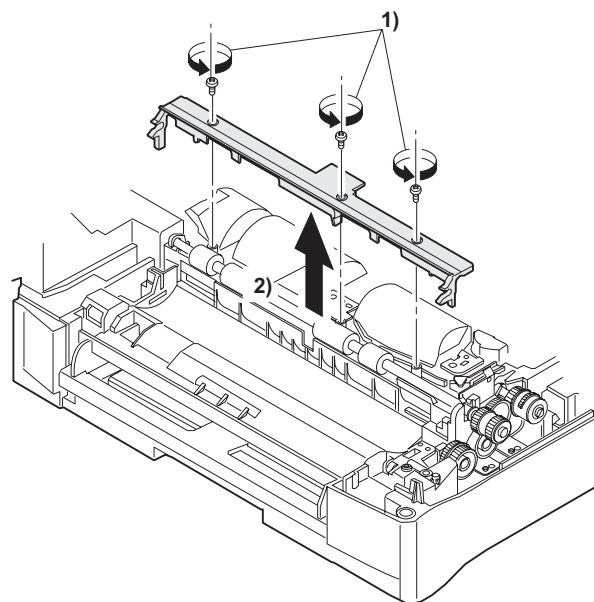
- 17) Remove two screws and remove the fusing connector.
- 18) Remove five screws and the connector, and lift the intermediate frame unit to remove.



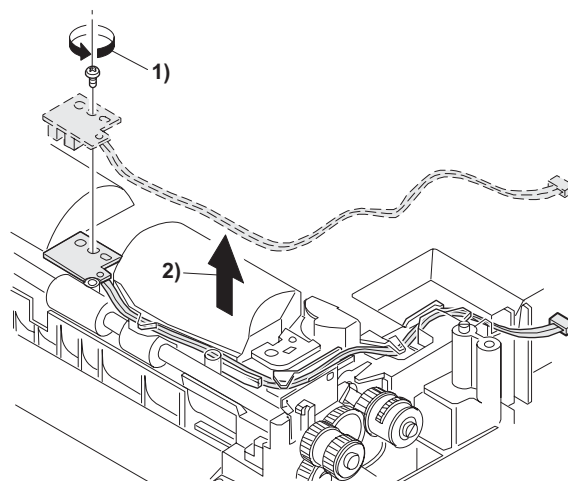
- 19) Remove the screw and the E-ring, and remove the PS semi-circular earth plate and the PS roller unit.
- 20) Remove the E-ring and remove the spring clutch from the PS roller unit.



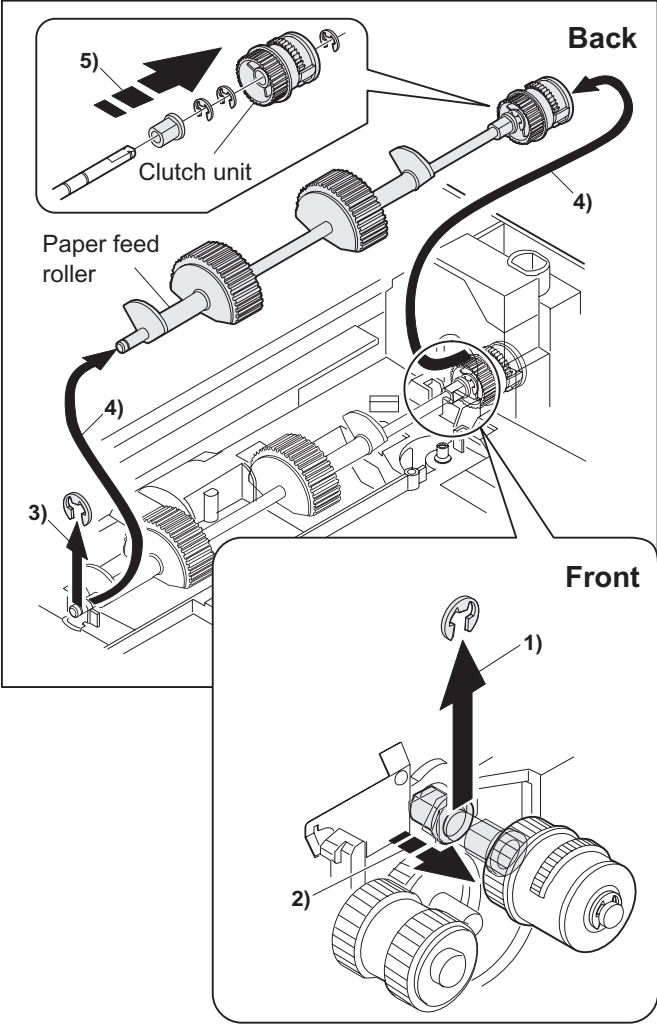
- 21) Remove three screws and remove the TC front paper guide.



- 22) Remove the screw and the connector, and remove the PPD1 sensor PWB.



- 23) Remove two E-rings and remove the paper feed roller.
- 24) Remove three E-rings and remove the clutch unit.



C. Assembly procedure

For assembly, reverse the disassembly procedure.

6. Manual paper feed section

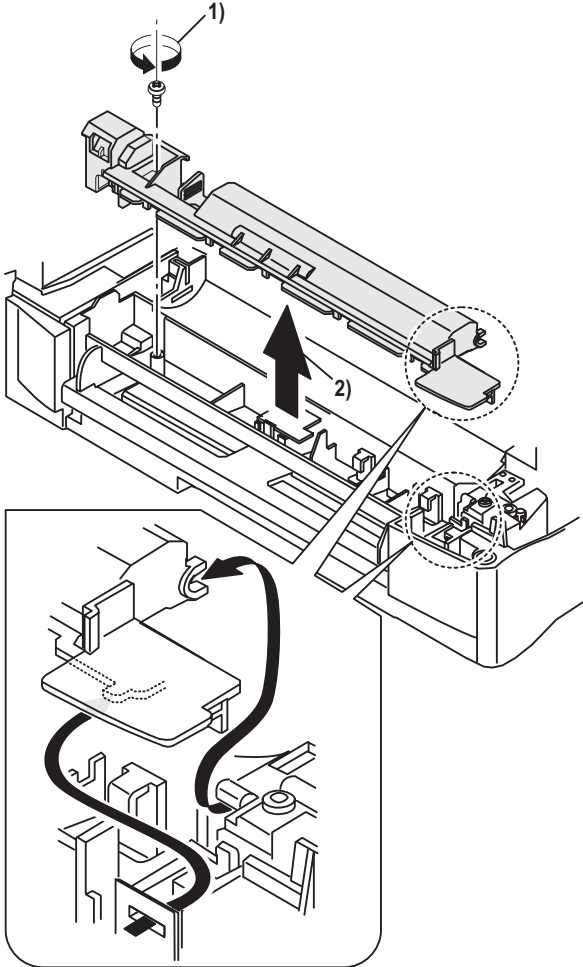
A. List

| No. | Part name | Ref. |
|-----|---------------------------|------|
| 1 | Manual transport roller | |
| 2 | Cassette detection switch | |
| 3 | PPD1 sensor PWB | |
| 4 | Side door detection unit | |

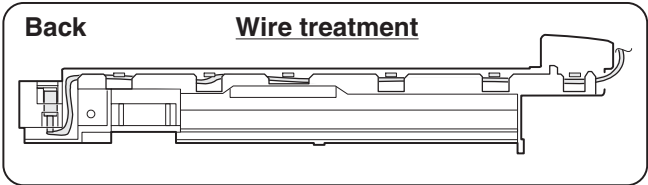
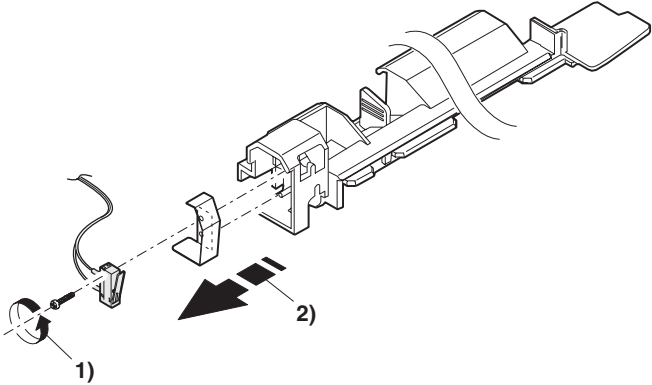
B. Disassembly procedure

Single unit

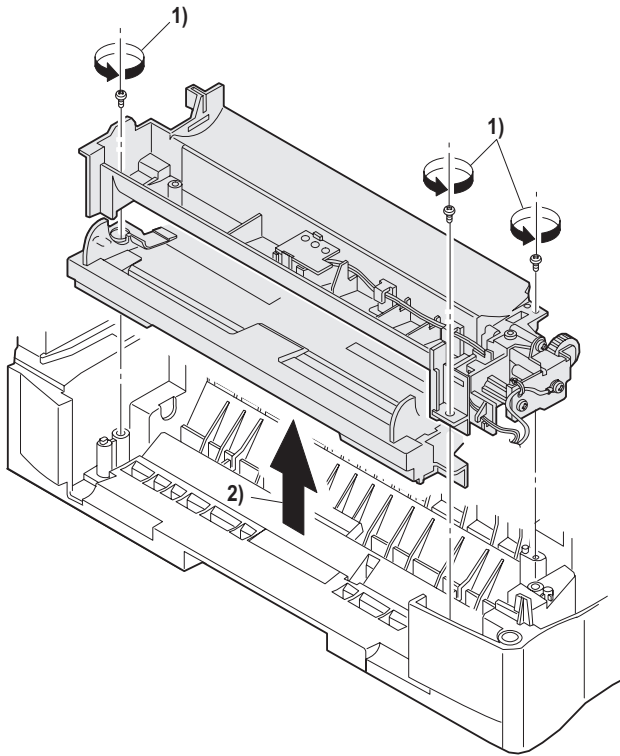
- 1) Remove the screw and remove the single upper cover.



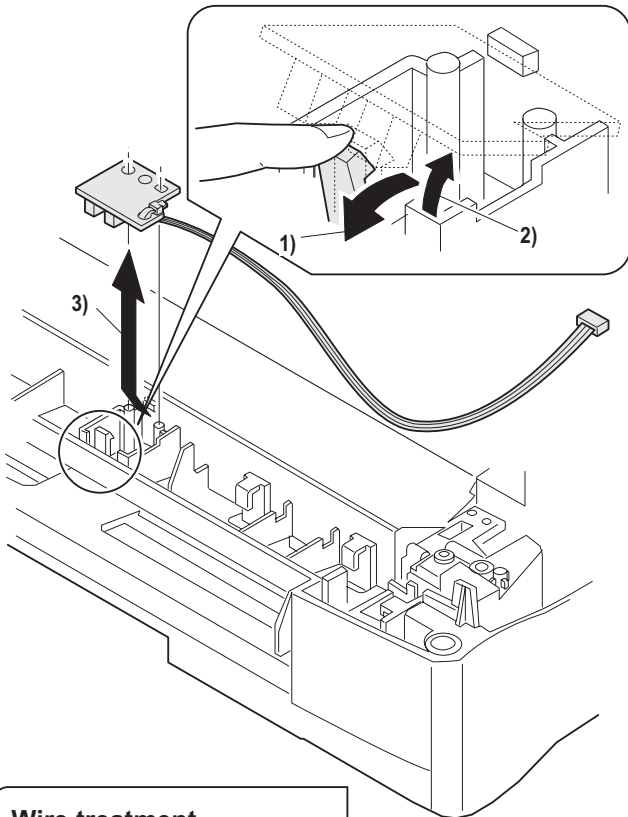
- 2) Remove the screw and remove the side door detection unit.



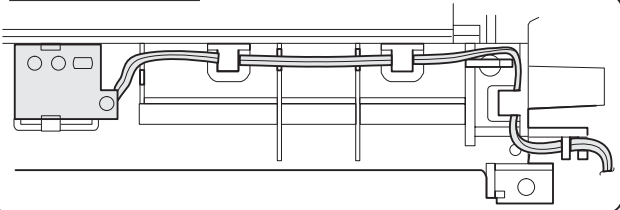
- 3) Remove three screws and remove the single manual feed upper frame.



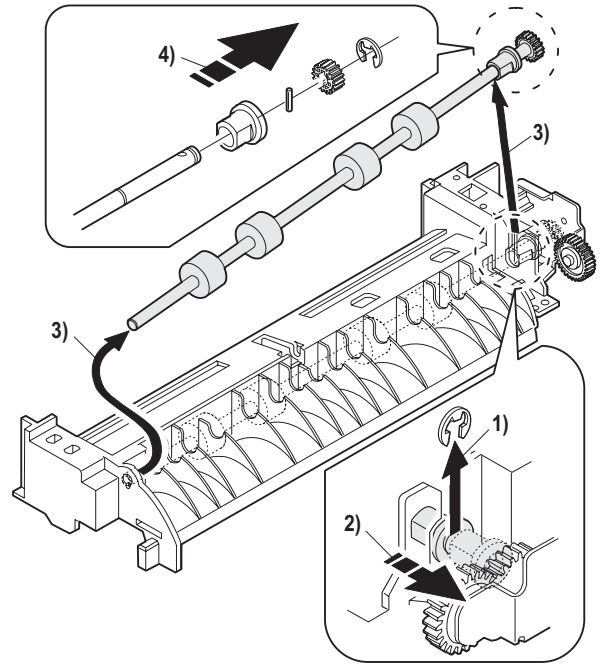
- 4) Remove the PPD1 sensor PWB.



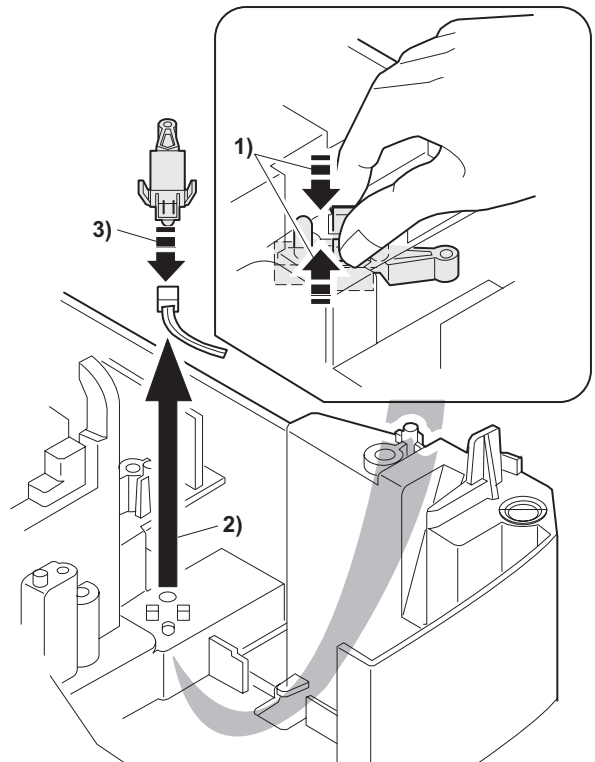
Wire treatment



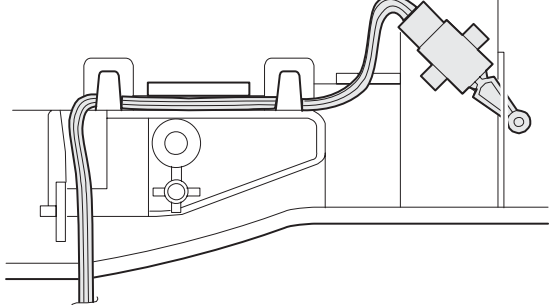
- 5) Remove the E-ring and remove the manual paper feed transport roller.



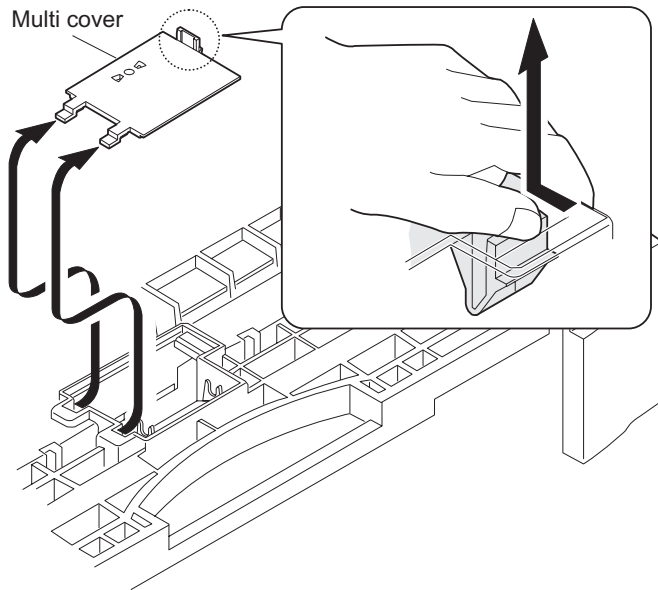
- 6) Remove the cassette detection switch.



Wire treatment

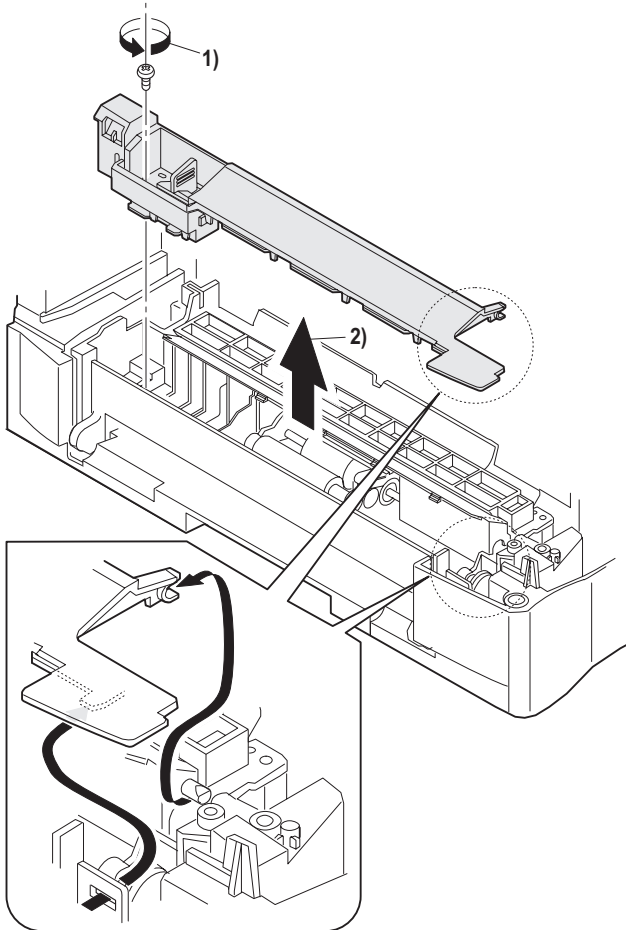


7) Remove the multi cover.

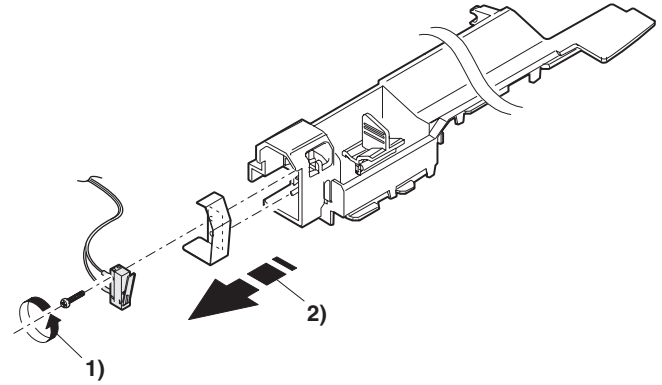


Multi unit

1) Remove the screw and remove the multi upper cover.

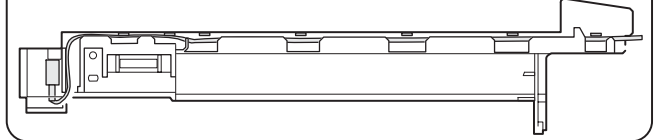


2) Remove the screw and remove the side door detection unit.

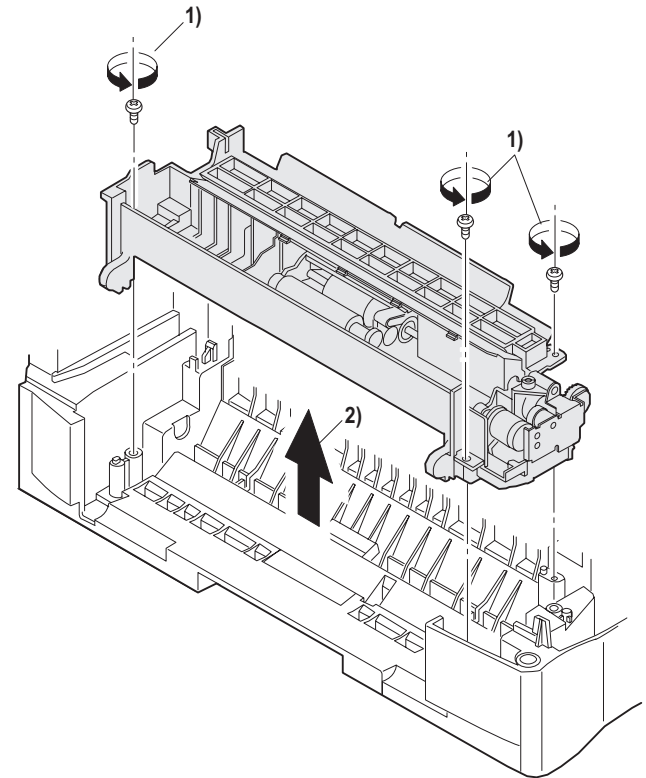


Back

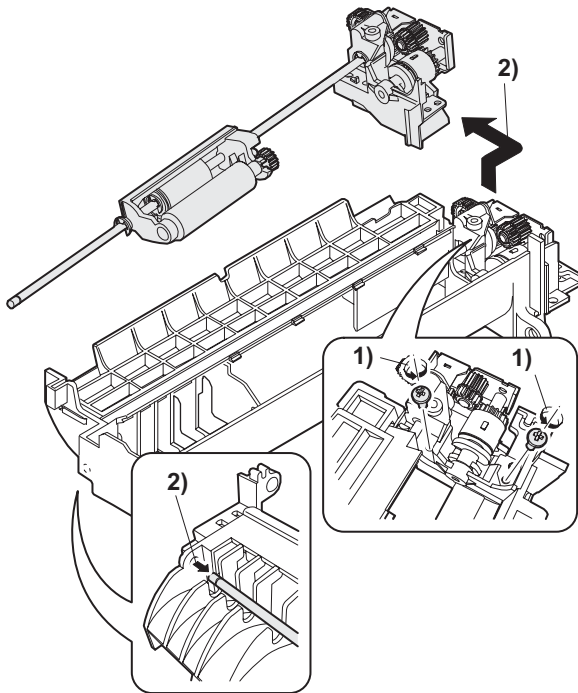
Wire treatment



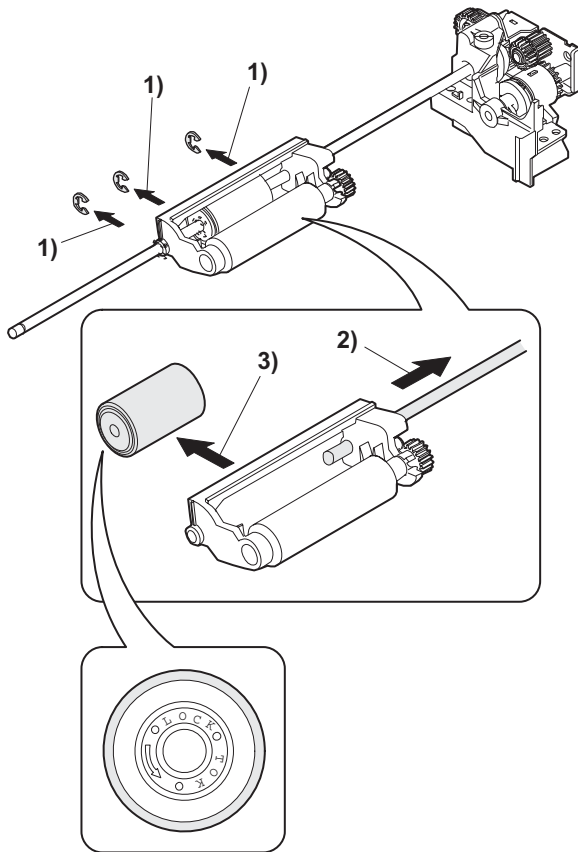
3) Remove three screws and remove the multi paper feed upper frame.



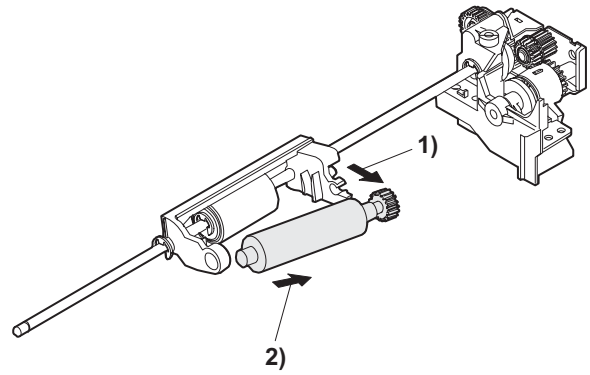
- 4) Remove two screws and remove the multi feed bracket unit from the multi paper feed upper frame.



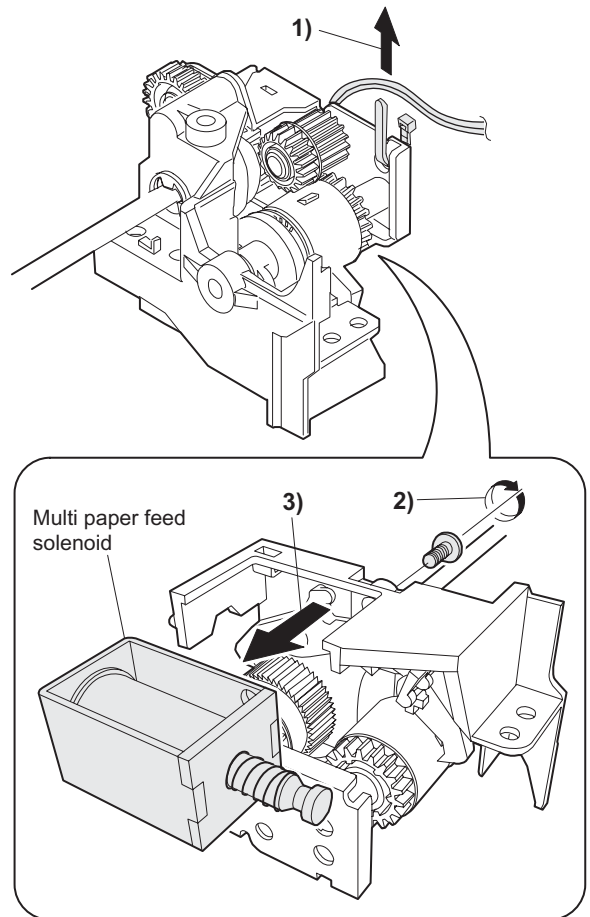
- 5) Remove three E-rings and remove the manual paper feed roller B9.



- 6) Remove the pick-up roller.



- 7) Cut the binding band and remove the multi paper feed solenoid.

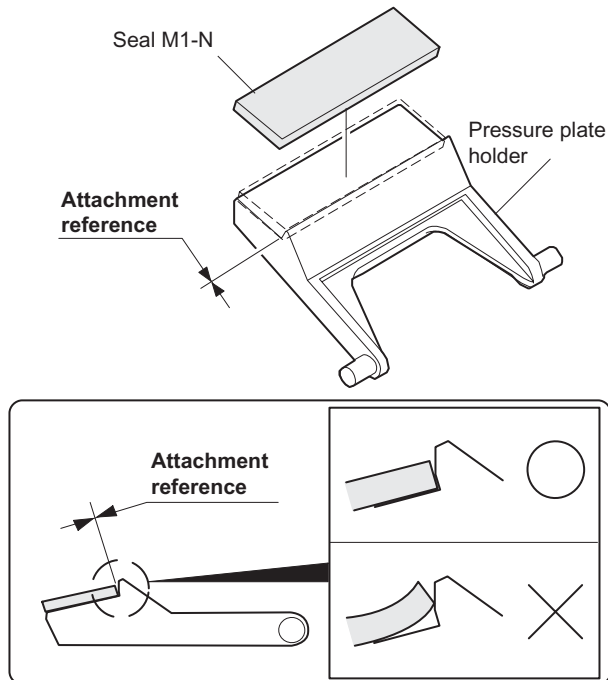


C. Assembly procedure

For assembly, reverse the disassembly procedure.

D. Pressure plate holder attachment

- 1) Attach the pressure plate holder so that the resin section is not covered with the seal M1-N.



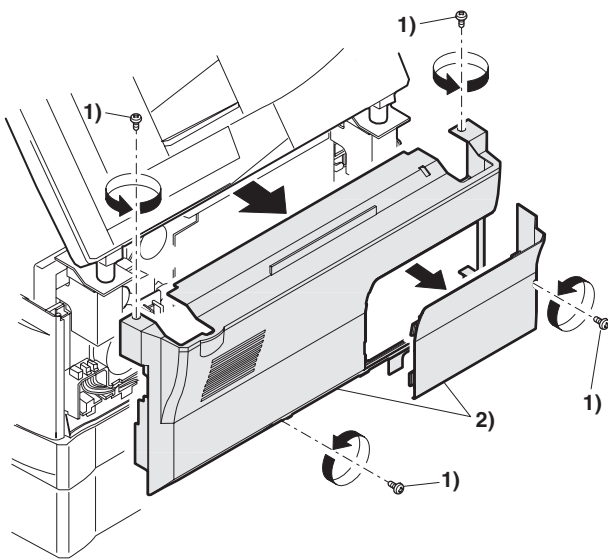
7. Rear frame section

A. List

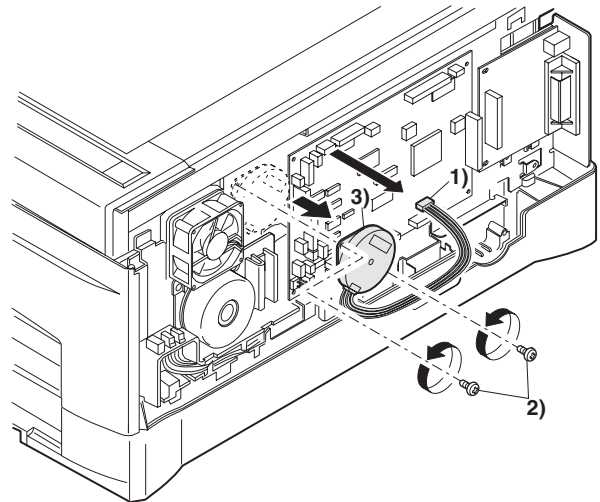
| No. | Part name | Ref. |
|-----|-------------------|------|
| 1 | Mirror motor | |
| 2 | Main motor | |
| 3 | Exhaust fan motor | |

B. Disassembly procedure

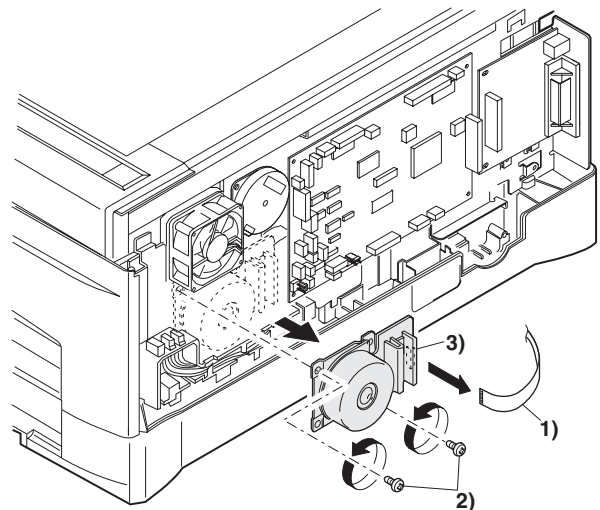
- 1) Remove four screws, and remove the rear cabinet and the rear cabinet cover.



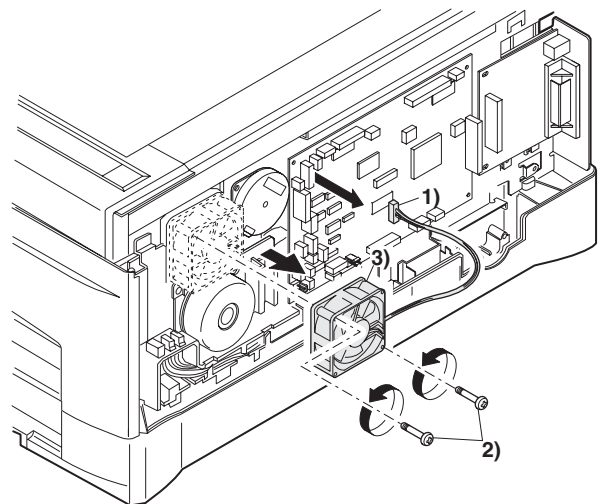
- 2) Disconnect the connector.
- 3) Remove two screws, and remove the scanner motor.



- 4) Remove two screws and one harness, and remove the main motor.



- 5) Remove two screws and one connector, and remove the exhaust fan motor.



C. Assembly procedure

For assembly, reverse the disassembly procedure.

8. Power section

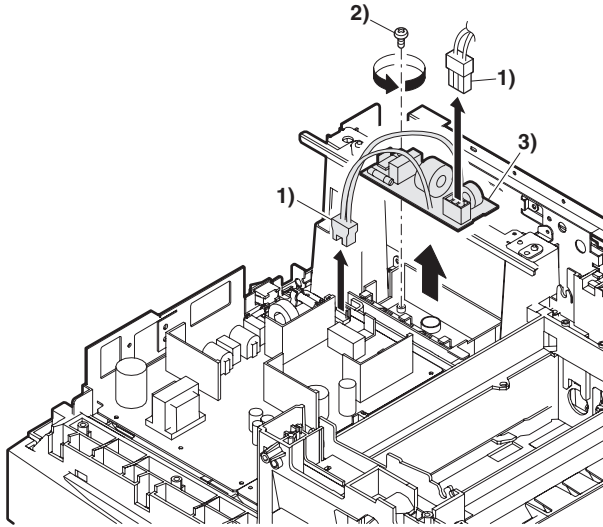
A. List

| No. | Part name Ref. |
|-----|------------------|
| 1 | Noise filter PWB |
| 2 | Power PWB |

B. Disassembly procedure

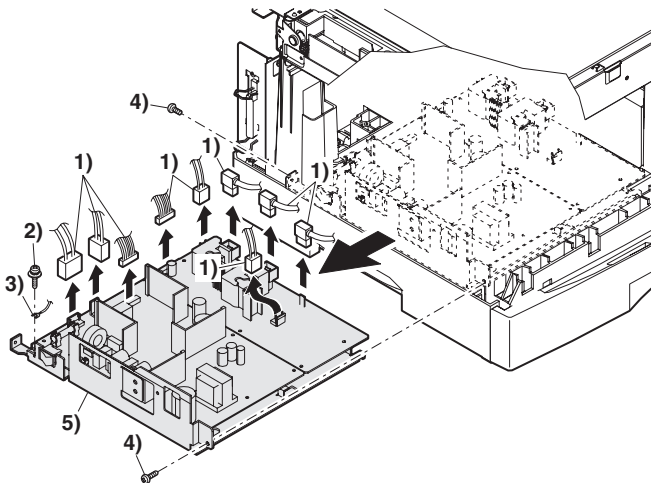
Noise filter PWB

- 1) Disconnect the connector at two positions.
- 2) Remove the screw, and remove the noise filter PWB unit.



Power PWB

- 1) Disconnect each connector.
- 2) Remove the screw, and remove the earth line.
- 3) Remove two screws, and remove the power PWB unit.



C. Assembly procedure

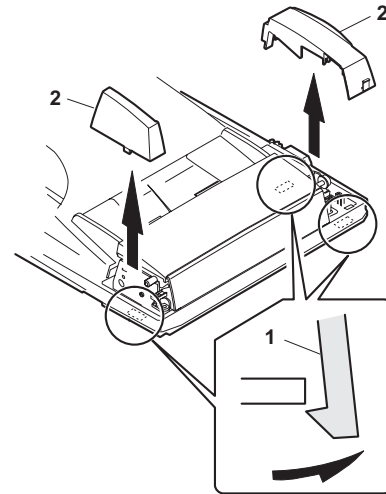
For assembly, reverse the disassembly procedure.

9. SPF section (SPF model only)

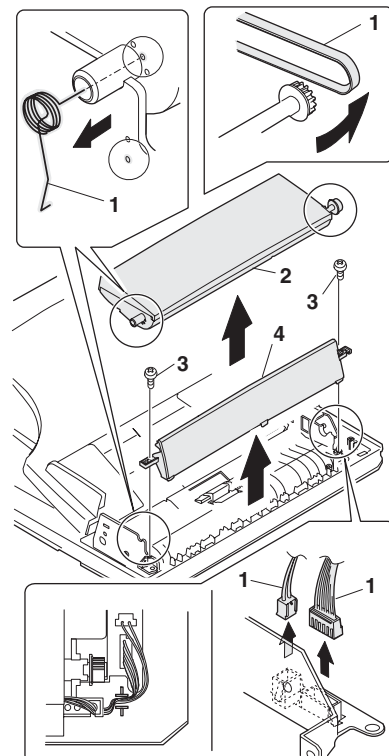
| No. | Part name Ref. |
|-----|-----------------------------------------|
| A | Sensor PWB |
| B | Pickup solenoid |
| C | Clutch |
| D | Manual paper feed roller, pickup roller |
| E | Belt |
| F | SPF motor |
| G | Paper entry sensor |
| H | PS roller |
| I | Paper exit roller |

Pickup unit removal

- 1) Remove three fixing pawls from the bottom of the machine.
- 2) Remove the front cover and the rear cover.



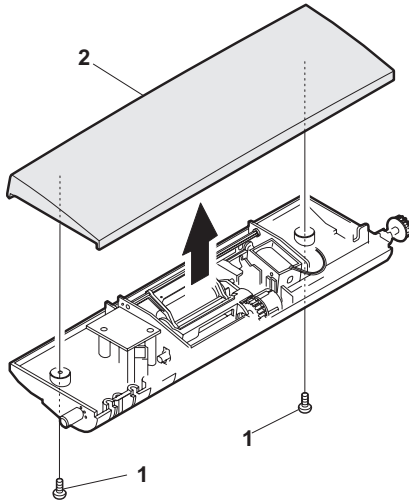
- 1) Remove the belt, the paper feed frame Spring, and two harnesses.
- 2) Remove the pickup unit.



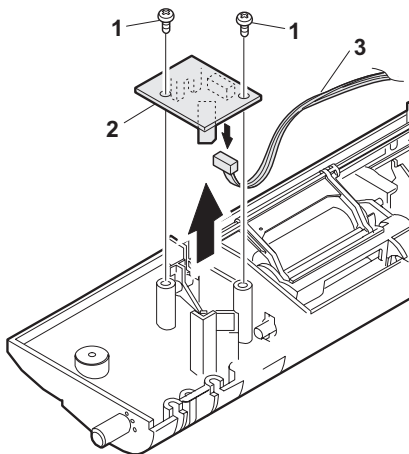
* When installing the parts, be careful of the hole position of the paper frame Spring.

A. Sensor PWB

- 1) Remove two screws from the bottom of the pickup unit.
- 2) Remove the upper cover.

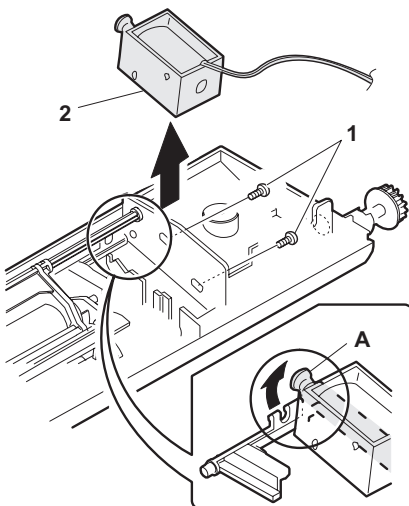


- 1) Remove two screws.
- 2) Remove the sensor PWB.
- 3) Remove the harness.



B. Pickup solenoid

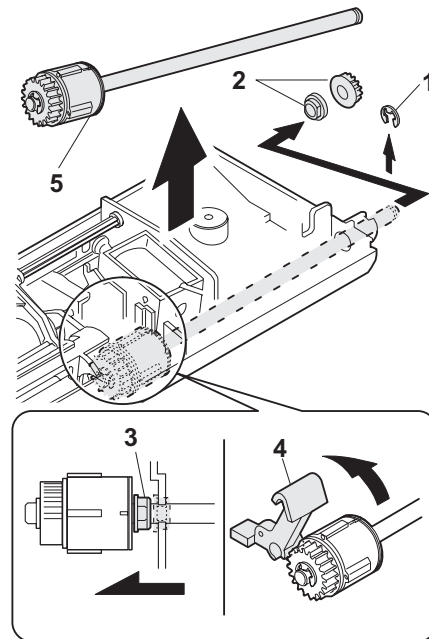
- 1) Remove two screws.
- 2) Remove the pickup solenoid



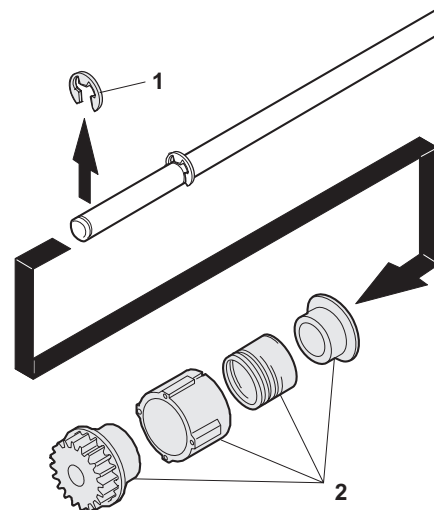
* When installing, hang iron core A on the solenoid arm.

C. Clutch

- 1) Remove the E-ring.
- 2) Remove the pulley and bush.
- 3) Slide the bush in the arrow direction.
- 4) Lift the clutch, and 5) remove the clutch.

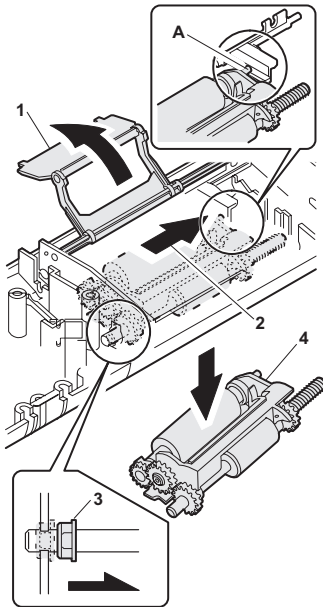


- 1) Remove the E-ring.
- 2) Remove the parts.



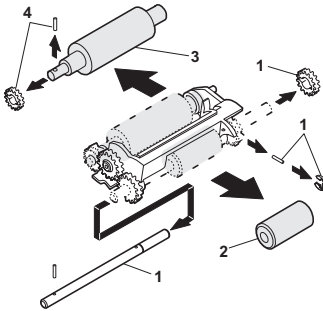
D. Manual paper feed roller, pickup roller

- 1) Lift the paper stopper.
- 2) Slide the take-up roller unit.
- 3) Slide the bushing in the direction of the arrow.
- 4) Remove the take-up roller unit.



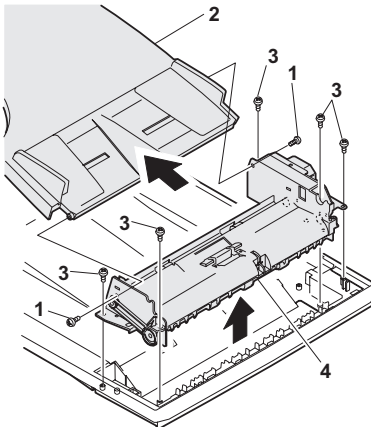
* When installing the take-up roller, hang the projection of the take-up roller unit on the solenoid arm.

- 1) Remove the parts.
- 2) Remove the manual paper feed roller.
- 3) Remove the pickup roller.
- 4) Remove the parts.



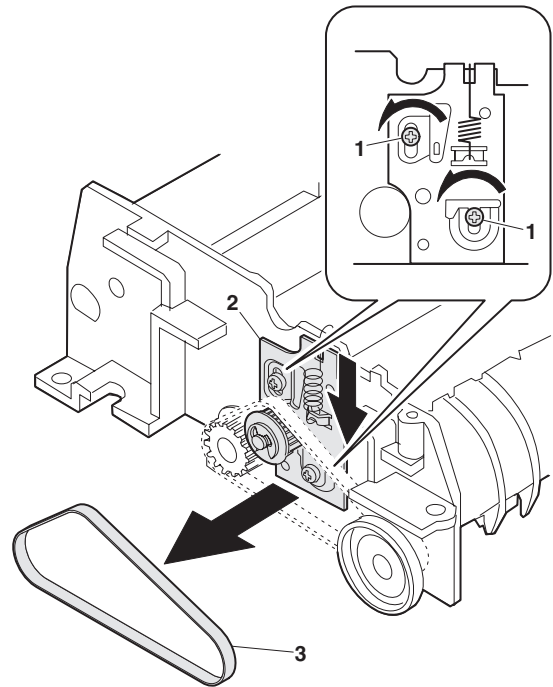
Transport unit removal

- 1) Remove two screws.
- 2) Remove the document tray unit.
- 3) Remove five screws.
- 4) Remove the transport unit.



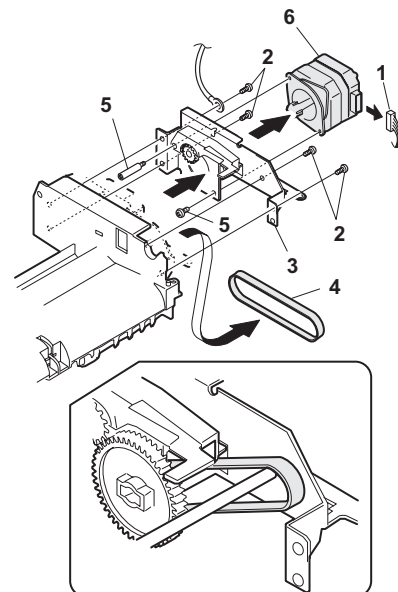
E. Belt

- 1) Remove the belt.



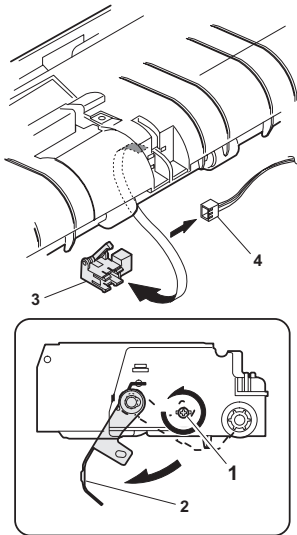
F. SPF motor

- 1) Remove the harness.
- 2) Remove four screws.
- 3) Remove the drive unit.
- 4) Remove the belt.
- 5) Remove two screws.
- 6) Remove the SPF motor.



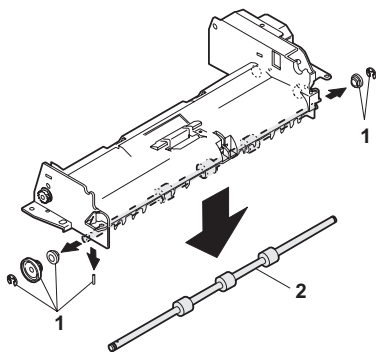
G. Paper entry sensor

- 1) Loosen the screw.
- 2) Open the paper exit paper guide.
- 3) Remove the paper entry sensor.
- 4) Remove the harness.



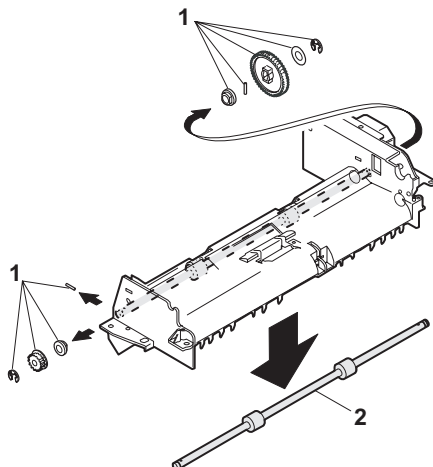
H. PS roller

- 1) Remove the parts.
- 2) Remove the paper supply roller.



I. Paper exit roller

- 1) Remove the parts.
- 2) Remove the paper exit roller.



[9] ADJUSTMENTS

1. Optical section

A. Copy magnification ratio adjustment

The copy magnification ratio must be adjusted in the main scanning direction and in the sub scanning direction. To adjust, use SIM 48-1.

(1) Outline

The main scanning (front/rear) direction magnification ratio adjustment is made automatically or manually.

Automatic adjustment: The width of the reference line marked on the shading correction plate is scanned to perform the main scanning (front/rear) direction magnification ratio adjustment automatically.

Manual adjustment: The adjustment is made by manual key operations. (In either of the automatic and manual adjustments, the zoom data register set value is changed for adjustment.)

The magnification ratio in the sub scanning direction is adjusted by changing the carriage (scanner) scanning speed.

(2) Main scanning direction magnification ratio adjustment

a. Cases when the adjustment is required

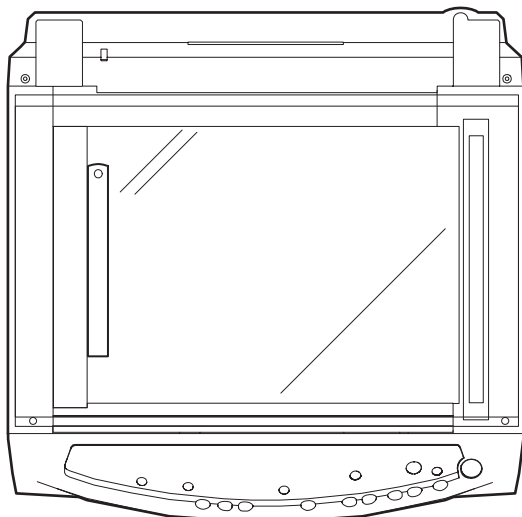
- 1) When the main PWB is replaced.
- 2) When the EEPROM in the main PWB is replaced.
- 3) When "U2" trouble occurs.
- 4) When repairing or replacing the optical section.

b. Necessary tools

- Screwdriver (+)
- Scale

c. Adjustment procedure

- 1) Set the scale vertically on the document table. (Use a long scale for precise adjustment.)



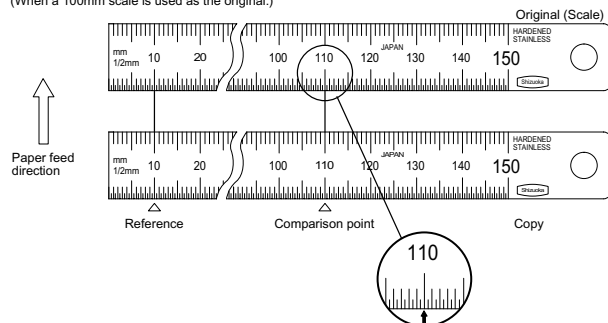
- 2) Set the copy magnification ratio to 100%.
- 3) Make a copy on A4 or 8 1/2" x 11" paper.
- 4) Measure the length of the copied scale image.

- 5) Calculate the main scanning direction magnification ratio.

Main scanning direction magnification ratio

$$= \frac{\text{Copy image dimensions}}{\text{Original dimension}} \times 100 (\%)$$

(When a 100mm scale is used as the original.)



- 6) Check that the copy magnification ratio is within the specified range. If it is not within the specified range, perform the following procedures.
- 7) Execute SIM 48-1 to select the main scanning direction copy magnification ratio adjustment mode.
To select the adjustment mode, use the copy mode select key.

In the case of the automatic adjustment, when the PRINT switch is pressed, the mirror base unit moves to the white plate for shading to scan the width of the reference line, calculating the correction value and displaying and storing this value.

After execution of the automatic adjustment, go out from the simulation mode and make a copy to check the magnification ratio.

If the magnification ratio is not in the specified range (100±1.0%), manually adjust as follows.

| Adjustment mode | Lighting lamp |
|--------------------------------------------------------------------|-----------------------------|
| Main scanning direction auto copy magnification ratio adjustment | Auto exposure lamp ON |
| Main scanning direction manual copy magnification ratio adjustment | Manual exposure lamp ON |
| Sub scanning direction copy magnification ratio adjustment | Photo exposure lamp ON |
| SPF mode scanning direction magnification ratio adjustment | Auto, Manual, Photo lamp ON |

- 8) Set the adjustment mode to Manual with the copy mode select key.
- 9) Enter the new set value of main scanning direction copy magnification ratio with the copy quantity set key, and press the COPY button.
- 10) Change the set value and repeat the adjustment until the ratio is within the specified range.
When the set value is changed by 1, the magnification ratio is changed by 0.1%.

(3) Sub scanning direction copy magnification ratio

a. Cases when the adjustment is required

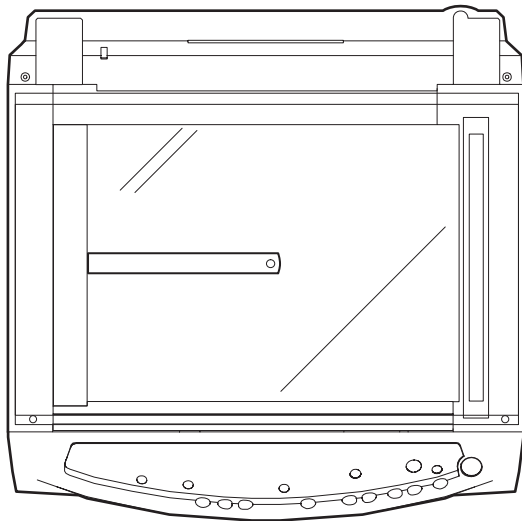
- 1) When the scanner unit drive section is disassembled or the part is replaced.
- 2) When the main PWB is replaced.
- 3) When the EEPROM in the main PWB is replaced.
- 4) When "U2" trouble occurs.

b. Necessary tools

- Scale

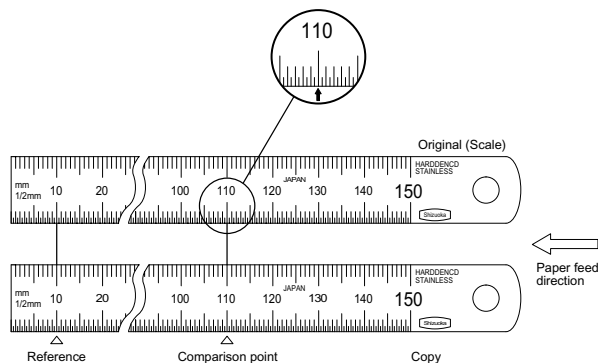
c. Adjustment procedure

- 1) Set the scale on the document table as shown below. (Use a long scale for precise adjustment.)



- 2) Set the copy magnification ratio to 100%.
- 3) Make a copy on A4 or 8 1/2" x 11" paper.
- 4) Measure the length of the copied scale image.
- 5) Calculate the sub scanning direction copy magnification ratio using the formula below.

$$= \frac{\text{Copy image dimensions}}{\text{Original dimension}} \times 100 (\%)$$



- 6) Check that the actual copy magnification ratio is within the specified range. (100 ± 1.0%). If it is not within the specified range, perform the following procedures.
- 7) Execute SIM 48-1 to select the sub scanning direction copy magnification ratio adjustment mode. To select the adjustment mode, use the copy mode select key. (Photo exposure lamp ON)
- 8) Enter the new set value of sub scanning direction copy magnification ratio with the copy quantity set key, and press the COPY button.

Repeat procedures 1) - 8) until the sub scanning direction actual copy magnification ratio in 100% copying is within the specified range. When the set value is changed by 1, the magnification ratio is changed by 0.1%.

B. Image position adjustment

There are following five kinds of image position adjustments, which are made by laser control except for the image scan start position adjustment. For the adjustments, SIM 50 - 01, 50 - 10, 50 - 18 and SIM 50 - 19 are used.

| No. | Adjustment item | Simulation |
|-----|---------------------------------------------------|------------|
| 1 | Print start position | 50 - 01 |
| 2 | Image lead edge void amount | 50 - 01 |
| 3 | Image scan start position | 50 - 01 |
| 4 | Image rear edge void amount | 50 - 01 |
| 5 | SPF image scan start position | 50 - 01 |
| 6 | Center offset | 50 - 10 |
| 7 | Memory reverse position adjustment in duplex copy | 50 - 18 |

To select the adjustment mode with SIM 50 - 01, use the copy mode select key.

The relationship between the adjustment modes and the lighting lamps are as shown in the table below.

| Adjustment mode | Lamp ON |
|--------------------------------------------------|------------------------|
| Print start position (Main cassette paper feed) | AE, main cassette lamp |
| ☆ Print start position (2nd cassette paper feed) | AE, 2nd cassette lamp |
| Print start position (Manual paper feed) | AE, manual feed lamp |
| Image lead edge void quantity | TEXT lamp |
| Image scan start position | PHOTO lamp |
| Image rear edge void quantity | AE, TEXT, PHOTO lamp |
| ☆ SPF image scan start position | AE, TEXT lamp |

☆ : Supported for the installing model and skipped for non-installing mode.

To select the adjustment mode with SIM 50 - 10, use the copy mode select key.

The relationship between the adjustment modes and the lighting lamps are as shown in the table below.

Machine with the multi manual paper feed unit

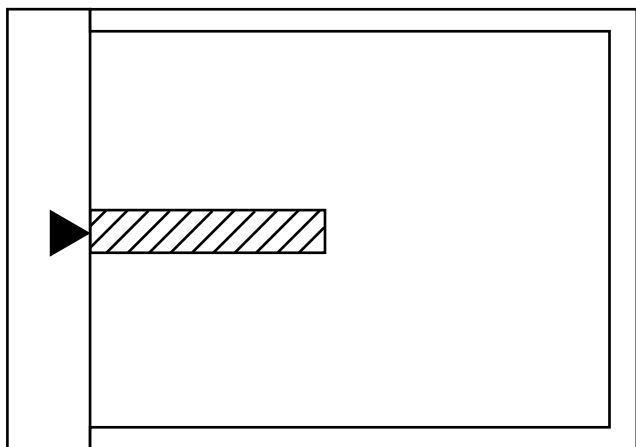
| Adjustment mode | Lamp ON |
|------------------------------------------------|----------------------------|
| Print center offset (Main cassette paper feed) | AE, main cassette lamp |
| Print center offset (Manual paper feed) | AE, manual paper feed lamp |
| OC/document center offset | AE, TEXT lamp |

Machine with the single manual paper feed unit

| Adjustment mode | Lamp ON |
|------------------------------------------------|----------------------------|
| Print center offset (Main cassette paper feed) | AE, main cassette lamp |
| Print center offset (Manual paper feed) | AE, manual paper feed lamp |
| OC/document center offset | AE, TEXT lamp |

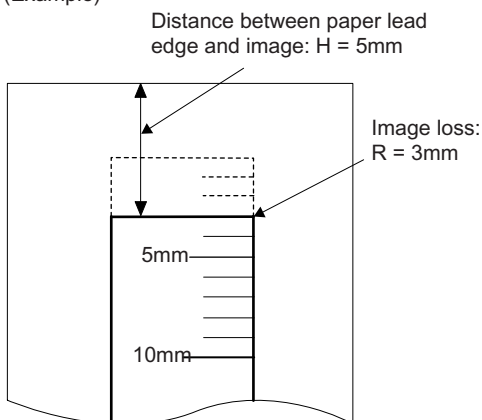
(1) Lead edge adjustment

- 1) Set a scale to the center of the paper lead edge guide as shown below, and cover it with B4 or 8 1/2" x 14" paper.



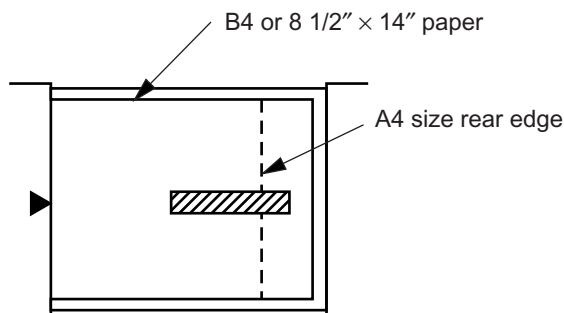
- 2) Execute SIM 50 - 01
- 3) Set the print start position (AE lamp ON) (A), the lead edge void amount (TEXT lamp ON) (B), and the scan start position (PHOTO lamp ON) (C) to 0, and make a copy of a scale at 100%.
- 4) Measure the image loss amount (R mm) of the scale image.
Set $C = 10 \times R$ (mm). (Example: Set the value of C to 30.)
When the value of C is increased by 10, the image loss is decreased by 1mm. (Default: 50)
- 5) Measure the distance (H mm) between the paper lead edge and the image print start position.
Set $A = 10 \times H$ (mm). (Example: Set the value of A to 50.)
When the value of A is increased by 10, the image lead edge is shifted to the paper lead edge by 1mm. (Default: 50)
- 6) Set the lead edge void amount to $B = 50$ (2.5mm).
When the value of B is increased by 10, the void amount is increased by about 1mm. For 25 or less, however, the void amount becomes zero. (Default: 50)

(Example)



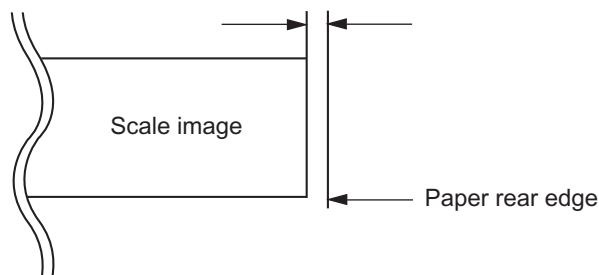
(2) Image rear edge void amount adjustment

- 1) Set a scale to the rear edge section of A4 or 11" x 8 1/2" paper size as shown in the figure below, and cover it with B4 or 8 1/2" x 14" paper.



- 2) Execute SIM 50 - 01 to select the image rear edge void amount adjustment mode.
The set adjustment value is displayed on the copy quantity display.
- 3) Make a copy and measure the void amount of image rear edge.

Void amount (Standard value: 2 3mm)

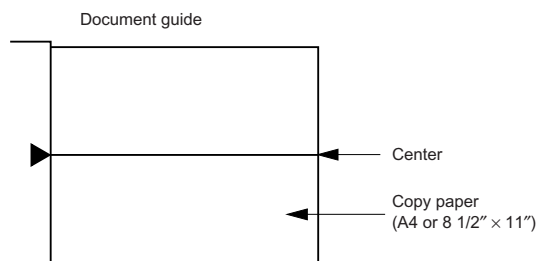


- 4) If the measurement value is out of the specified range, change the set value and repeat the adjustment procedure.
The default value is 50.

Note: The rear edge void cannot be checked with the first sheet after entering the simulation mode, the first sheet after turning off/on the power, or the first sheet after inserting the cassette. Use the second or later sheet to check the rear edge void.

(3) Center offset adjustment

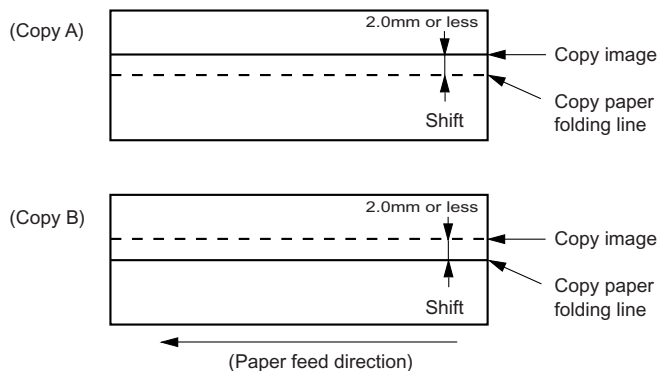
- 1) Set the self-made test chart for the center position adjustment so that its center line is aligned with the center mark of the document guide.
- Test chart for the center position adjustment.
Draw a line at the center of A4 or 8 1/2" x 11" paper in the paper transport direction.



- 2) Execute SIM 50 - 10 to select the print center offset (cassette paper feed) adjustment mode.
The set adjustment value is displayed on the copy quantity display.

- 3) Make a copy and check that the copied center line is properly positioned.

The standard value is 0 ±2mm from the paper center.



- 4) If the measured value is out of the specified range, change the set value and repeat the adjustment procedure.
When the set value is increased by 1, the copy image is shifted by 0.1mm toward the rear frame.
- For the manual paper feed, change the manual paper feed adjustment mode and perform the similar procedures.
 - Since the document center offset is automatically adjusted by the CCD which scan the reference lines (F/R) on the back of document guide, there is no need to adjust manually.

2. Copy density adjustment

A. Copy density adjustment timing

The copy density adjustment must be performed in the following cases:

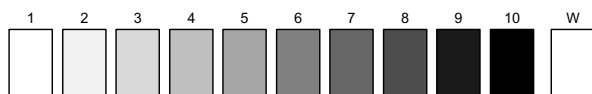
- When maintenance is performed.
- When the developing bias/grid bias voltage is adjusted.
- When the optical section is cleaned.
- When a part in the optical section is replaced.
- When the optical section is disassembled.
- When the OPC drum is replaced.
- When the main control PWB is replaced.
- When the EEPROM on the main control PWB is replaced.
- When the memory trouble (U2) occurs.

B. Note for copy density adjustment

- 1) Arrangement before execution of the copy density adjustment
- Clean the optical section.
 - Clean or replace the charger wire.
 - Check that the voltage at the high voltage section and the developing bias voltage are in the specified range.

C. Necessary tool for copy density adjustment

- One of the following test charts:
UKOG-0162FCZZ, UKOG-0089CSZZ, KODAK GRAY SCALE
- B4 (14" x 8 1/2") white paper
- The user program AE setting should be "3."



Test chart comparison table

| | | | | | | | | | | | |
|---------------------------|-----|---|-----|---|-----|---|---|---|-----|-----|---|
| UKOG-0162FCZZ DENSITY No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | W |
| UKOG-0089CSZZ DENSITY No. | 0.1 | | 0.2 | | 0.3 | | | | 0.5 | 1.9 | 0 |
| KODAK GRAY SCALE | | 1 | | 2 | | 3 | | 4 | | 19 | A |

D. Features of copy density adjustment

For the copy density adjustment, the image data shift function provided in the image process LSI is used.

List of the adjustment modes

| | |
|-----------------|-----------------------------------------------------------------------|
| Auto Mode | Brightness 1 step only |
| Manual Mode | Brightness 5 steps. Adjustment of only the center brightness is made. |
| Photo Mode | Brightness 5 steps. Adjustment of only the center brightness is made. |
| Manual T/S mode | Brightness 5 steps. Adjustment of only the center brightness is made. |
| T/S Auto mode | Brightness 1 step only |

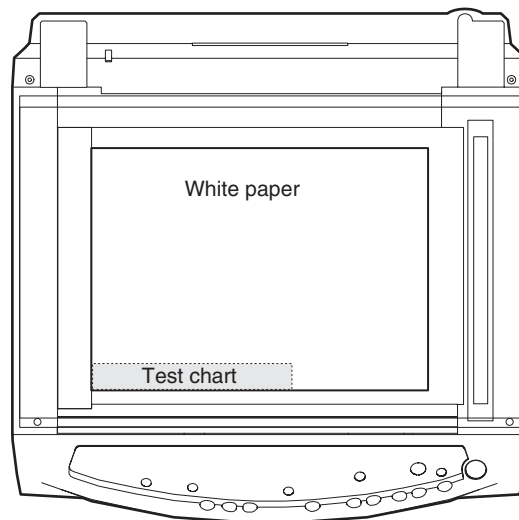
E. Copy density adjustment procedure

Use SIM 46 - 01 to set the copy density for each copy mode.

For selection of modes, use the copy mode select key.

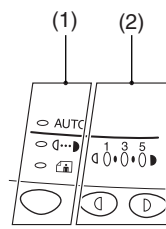
(1) Test chart (UKOG-0162FCZZ) setting

- 1) Place the test chart so that its edge is aligned with the A4 (Letter) reference line on the document table. Then place a A4 (14" x 8 1/2") white paper on the test chart and close the document cover.



(2) Perform the adjustment in each mode.

- 1) Execute SIM 46-1.
- 2) Select the mode to be adjusted with the exposure mode select key. Set the exposure level to 3 for all adjustment. (Except for the auto mode.)



- (1) Mode select key/display lamp
- (2) Exposure level select key/display lamp

| Adjustment mode | Exposure mode display lamp | Sharp gray chart adjustment level |
|-----------------|----------------------------|-----------------------------------|
| Auto mode | Auto lamp ON | "3" is slightly copied. |
| Manual mode | Manual lamp ON | "3" is slightly copied. |
| Photo mode | Photo lamp ON | "3" is slightly copied. |
| Manual T/S mode | Manual lamp/Photo lamp ON | "3" is slightly copied. |
| Auto T/S mode | Auto lamp/Photo lamp ON | "3" is slightly copied. |

- 3) Make a copy.
Check the adjustment level (shown in the above table) of the exposure test chart (Sharp Gray Scale).

| | Sharp Gray Scale adjustment level | | | | | | | | | | |
|---------------------|-----------------------------------|---|------------------|---|---|---|---|---|---|----|---|
| Non toner save mode | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | W |
| | Not copied. | | Slightly copied. | | | | | | | | |
| Toner save mode | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | W |
| | Not copied. | | Slightly copied. | | | | | | | | |

(When too bright): Decrease the value displayed on the copy quantity display.

(When too dark): Increase the value displayed on the copy quantity display.

* The value can be set in the range of 1 - 99.

3. High voltage adjustment

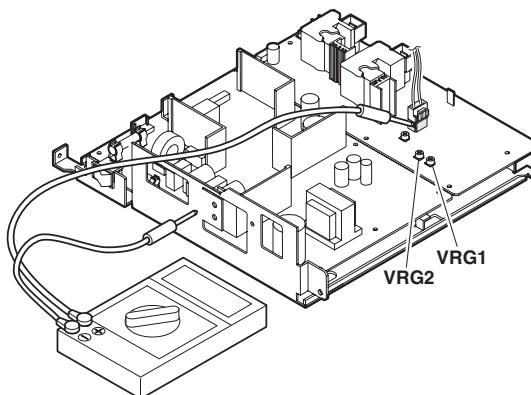
A. Main charger (Grid bias)

Note:

- Use a digital multi meter with internal resistance of 10MΩ or more measurement.
- After adjusting the grid LOW output, adjust the HIGH output. Do not reverse the sequence.

Procedures

- 1) Set the digital multi meter range to DC700V.
- 2) Set the positive side of the test rod to the connector CN11-3 (GRID) of high voltage section of the power PWB and set the negative side to the frame ground (power frame).
- 3) Execute SIM 8-3. (The main charger output is supplied for 30 sec in the grid voltage LOW output mode.)
- 4) Adjust the control volume (VRG2) so that the output voltage is $-390 \pm 20V$.
- 5) Execute SIM 8-2. (The main charger output is supplied for 30 sec in the grid voltage HIGH output mode.)
- 6) Adjust the control volume (VRG1) so that the output voltage is $580 \pm 12V$.

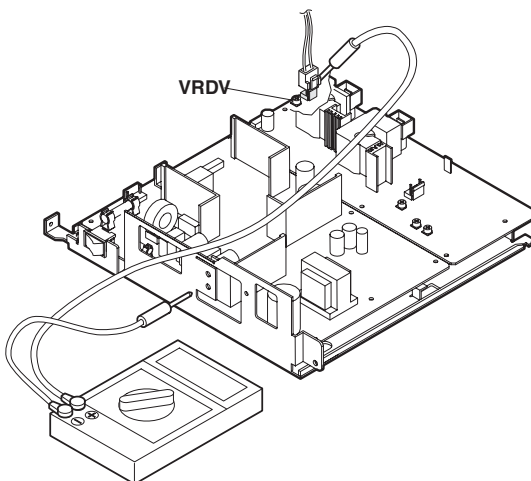


B. DV bias check

- Note:
- A digital multi meter with internal resistance of 1GΩ must be used for correct check.
 - The adjustment volume is locked, and no adjustment can be made.

Procedures

- 1) Set the digital multi meter range to DC500V.
- 2) Set the positive side of the test rod to the connector CN-10-1 (DV BIAS) and set the negative side to the frame ground (power frame).
- 3) Execute SIM 25-1 to output the developing bias for 30sec, and check that the output is $-400 \pm 8V$.



[10] SIMULATION, TROUBLE CODES

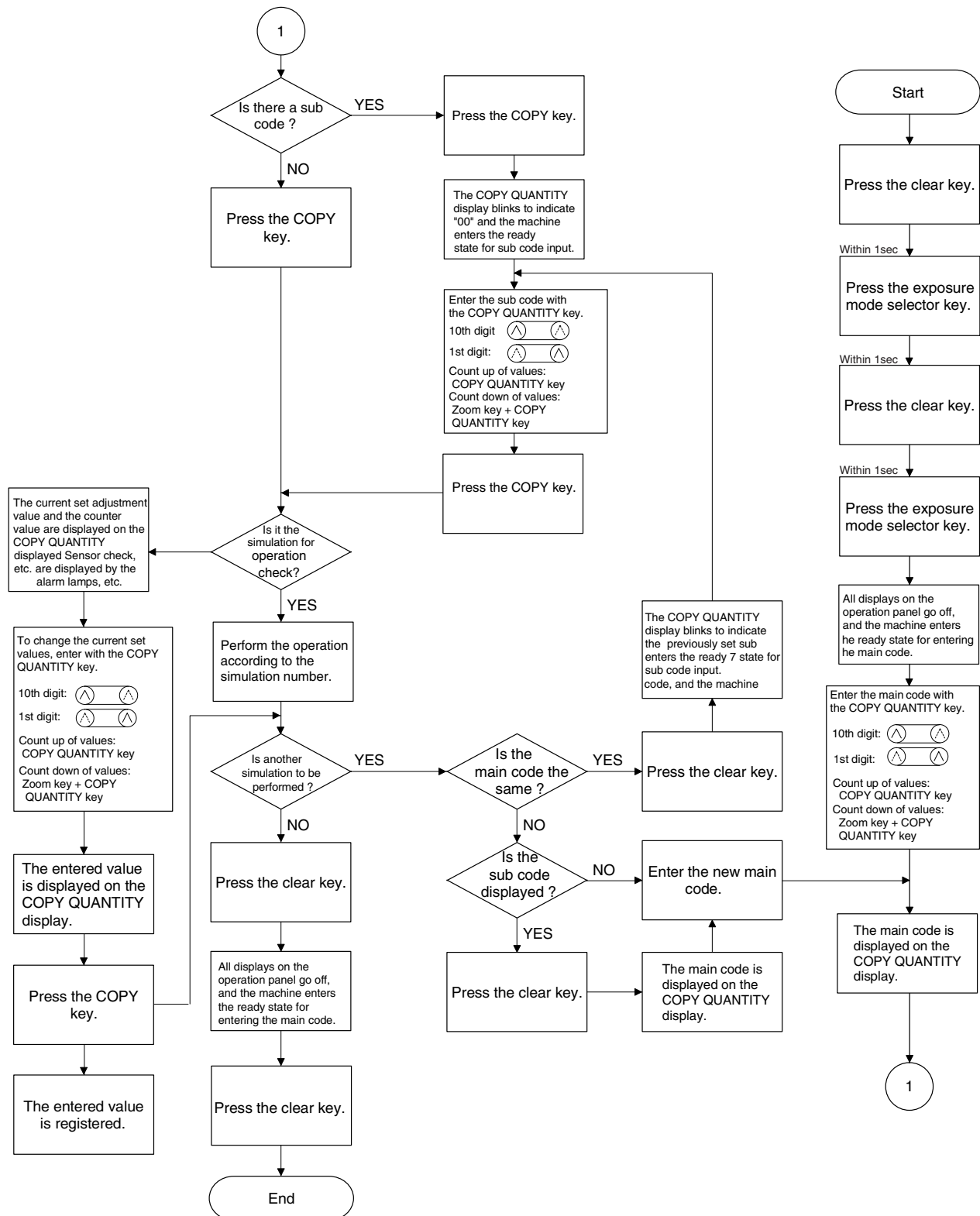
1. Entering the simulation mode

To enter the serviceman simulation mode, press the keys as follows:

Clear → Density select → Clear → Density select

To cancel the simulation mode, press the clear key.

Flow chart of entering the simulation mode



2. List of simulations

| Sim No. | Kind of main code | Sub code | Operation |
|---------|-----------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01 | Optical system | 01 06 | Mirror scan operation Aging of mirror scanning |
| 02 | SPF Individual load operation | 02 03 04 | SPF sensor status display Motor ON Paper feed solenoid ON |
| 05 | Lamp ON check | 01 02 03 | Operation panel display check Fusing lamp, cooling fan operation check Copy lamp ON |
| 06 | Machine individual load operation | 01 02 | Paper feed solenoid ON Resist solenoid ON |
| 07 | Aging | 01 06 | Warm-up display and aging with jam Intermittent aging |
| 08 | High voltage output check | 01 02 03 06 | Developing bias Main charger (Grid high) Grid voltage (Low) Transfer charger |
| 10 | Other | None | Toner motor aging |
| 14 | Trouble reset | None | Cancel of troubles other than U2 |
| 16 | U2 trouble reset | None | Cancel of U2 trouble |
| 22 | Counter display | 04 05 08 12 14 17 18 19 21 22 | JAM total counter display Total counter display SPF counter display Drum counter display P-ROM version display Copy counter display Printer counter display Scanner mode counter display Scanner counter display SPF JAM counter display |
| 24 | Special counter clear | 01 04 07 08 09 13 14 15 | JAM total counter clear SPF counter clear Drum counter clear Copy counter clear Printer counter clear Scanner counter clear SPF JAM total counter clear Scanner mode counter clear |
| 25 | Main motor ON | 01 10 | Main motor operation check (Cooling fan motor rotation check) Polygon motor ON |

| Sim No. | Kind of main code | Sub code | Operation |
|---------|---------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | Various setup | 01 02 03 04 06 07 20 30 38 39 40 42 43 44 62 63 | Manual feed setup (R) SPF setup Second cassette setup Machine duplex setup Destination setup Machine conditions check Rear edge void setup CE mark support control ON/OFF Cancel of stop at drum life over Memory capacity check Polygon motor OFF time setup (Time required for turning OFF after completion of printing) Transfer ON timing control setup Side void setup SPF document rear edge read setup Energy-save mode copy lamp setup Fan control select setup |
| 30 | Sensor operation check (Standard provision) | 01 | Paper sensor status display |
| 43 | Fusing temperature setup | 01 04 05 09 | Fusing temperature setup (Normal copy) Fusing temperature setup 2 Fusing temperature setup in duplex copy Setup of fusing control of postcard size paper |
| 46 | Exposure adjustment | 01 02 18 19 20 29 31 32 | Copy density adjustment (300dpi) Copy density adjustment (600dpi) Image contrast adjustment (300dpi) γ table setup or AE operation mode setup SPF exposure correction Image contrast adjustment (600dpi) Image sharpness adjustment Copier color reproduction setup |
| 48 | Magnification ratio correction | 01 | Front/rear (main scanning) direction and scan (sub scanning) direction magnification ratio adjustment |
| 49 | | 01 | Flash ROM program writing mode |
| 50 | Lead edge adjustment | 01 10 | Lead edge image position Center offset adjustment |
| 51 | Timing adjustment | 02 | Resist quantity adjustment |
| 53 | | 08 | SPF scan position automatic adjustment |
| 61 | Laser system operation | 03 | Polygon motor check (HSYNC output check) |
| 63 | Shading | 01 | Shading check |
| 64 | Self print | 01 | Self print |

3. Contents of simulations

Input method: Clear key → Exposure Select key → Clear key → Exposure Select key

| Main code | Sub code | Content | | | | | | | | | | | | | | |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|--------------------------------------|-------------------------------------|----------|-----------------------------------------|-------------------------------------------|---------------------------------------|--------------|---------------------------------|--|-----------------------------|--|----------------------|
| 01 | 01 | Mirror scan operation (Operation/Procedure) 1. When this simulation is executed, the mirror home position is detected. <table><tr><th>Sensor name</th><th>Display lamp</th></tr><tr><td>Mirror home position sensor</td><td>OPC drum cartridge replacement lamp</td></tr></table> 2. When the _START key is pressed, scanning is executed at the speed corresponding to the currently set copy magnification ratio. The copy magnification ratio can be arbitrarily set with the magnification ratio select key/zoom key. | Sensor name | Display lamp | Mirror home position sensor | OPC drum cartridge replacement lamp | | | | | | | | | | |
| | Sensor name | Display lamp | | | | | | | | | | | | | | |
| Mirror home position sensor | OPC drum cartridge replacement lamp | | | | | | | | | | | | | | | |
| 06 | Aging of mirror scanning When the PRINT switch is pressed, the mirror base performs full scan at the speed of the set magnification ratio. After 3 sec, the mirror case performs full scan again. These procedures are repeated until the clear key is pressed. (When the PRINT switch is pressed once, the ready lamp keeps OFF.) The status of the mirror home position sensor is displayed with the photoconductor cartridge lamp. (The lamp is ON when the mirror is at the home position.) During aging, the copy lamp keeps ON. | | | | | | | | | | | | | | | |
| 02 | 02 | SPF sensor status display ON/OFF of the sensors in the SPF can be checked with the following lamps. <table><tr><th>Display</th><th>Sensor</th></tr><tr><td>Developer cartridge replacement lamp</td><td>Document set detection (SPID)</td></tr><tr><td>Jam lamp</td><td>SPF document transport detection (SPPD)</td></tr><tr><td>Photoconductor cartridge replacement lamp</td><td>SPF cover open/close detection (SDOD)</td></tr><tr><td>SPF jam lamp</td><td>SPF open/close detection (SDSW)</td></tr><tr><td></td><td>FAX document size detection</td></tr><tr><td></td><td>Paper size detection</td></tr></table> | Display | Sensor | Developer cartridge replacement lamp | Document set detection (SPID) | Jam lamp | SPF document transport detection (SPPD) | Photoconductor cartridge replacement lamp | SPF cover open/close detection (SDOD) | SPF jam lamp | SPF open/close detection (SDSW) | | FAX document size detection | | Paper size detection |
| | Display | Sensor | | | | | | | | | | | | | | |
| Developer cartridge replacement lamp | Document set detection (SPID) | | | | | | | | | | | | | | | |
| Jam lamp | SPF document transport detection (SPPD) | | | | | | | | | | | | | | | |
| Photoconductor cartridge replacement lamp | SPF cover open/close detection (SDOD) | | | | | | | | | | | | | | | |
| SPF jam lamp | SPF open/close detection (SDSW) | | | | | | | | | | | | | | | |
| | FAX document size detection | | | | | | | | | | | | | | | |
| | Paper size detection | | | | | | | | | | | | | | | |
| | 03 | Motor ON (Operation/Procedure) When the start key is pressed, the SPF motor rotates for 10 sec at the speed corresponding to the currently set magnification ratio. | | | | | | | | | | | | | | |
| | 04 | Paper feed solenoid ON (Operation/Procedure) When the start key is pressed, the SPF paper feed solenoid repeats ON (500 ms) and OFF (500 ms) 20 times. | | | | | | | | | | | | | | |
| 05 | 01 | Operation panel display check • When the PRINT switch is pressed, all LEDs (including 7-segment LEDs) on the operation panel are lighted. (LED check mode) • When 1Up key is pressed, the LEDs on the operation panel are lighted individually from the top left to the bottom right in sequence. After completion of all individual lighting, all LEDs are lighted simultaneously. (The 7-segment LED lights the three-digit sections at the same time.) Individual lighting frequency ON: 300ms, OFF: 20ms • When the CLEAR key is pressed, this simulation is terminated. • When the PRINT switch is pressed in the LED check mode, the machine enters the Key input check mode. “Key input check mode” When the machine enters the Key input check mode, the value display section indicates “— — —.” Every time any key on the operation panel is pressed, the entered value is added and displayed on the value display section. However, the keys that were pressed once are not counted again. • When the PRINT switch is pressed, the entered value is added and displayed for 3 sec and all the LEDs are lighted. (LED lighting check mode) (Note for Key input check mode) • Press the PRINT switch at the end. (If it is pressed in the middle of the process, the entered value up to that moment is displayed for 3 sec and the machine enters the LED lighting check mode. (ALL the LEDs are lighted.)) • Multiple key inputs are ignored. | | | | | | | | | | | | | | |
| | 02 | Fusing lamp, cooling fan operation check When the PRINT switch is pressed, the fusing lamp repeats operations of 500ms-ON and 500ms-OFF 5 times. During that time, the cooling fan motor rotates. | | | | | | | | | | | | | | |
| | 03 | Copy lamp ON (Operation/Procedure) When the START key is pressed, the copy lamp is lighted for 5 sec. | | | | | | | | | | | | | | |
| 06 | 01 | Paper feed solenoid ON (Operation/Procedure) When the START key is pressed, the paper feed solenoid selected by the tray select key repeats ON (500ms) and OFF (500ms) 20 times. | | | | | | | | | | | | | | |
| | 02 | Resist solenoid ON (Operation/Procedure) When the START key is pressed, the resist solenoid (RRS) repeats ON (500ms) and OFF (500ms) 20 times. | | | | | | | | | | | | | | |

| Main code | Sub code | Content |
|-----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 07 | 01 | <p>Warm-up display and aging with jam (Operation/Procedure)</p> <ol style="list-style-type: none"> 1. When the simulation is executed, warming up is started. 2. Warm-up time is counted and displayed every second on the copy quantity display. 3. After completion of warm-up, the time count is stopped and the ready lamp is lighted. 4. Press the clear key to clear the warm-up time display, set the copy quantity, and press the START key, and the machine will copy the set quantity repeatedly. <p>This simulation is canceled by turning off the power or executing any simulation which performs hardware reset.</p> |
| | 06 | <p>Intermittent aging (Operation/Procedure)</p> <ol style="list-style-type: none"> 1. When the simulation is executed, warming up is started. 2. After completion of warm-up, the ready lamp is lighted. 3. Set the copy quantity and press the START key, and the machine will copy the set quantity repeatedly. 4. After 3 sec of the interval time from completion of copying the set quantity, the machine will resume copying. 5. The above operation 4 is repeated. <p>This simulation is canceled by turning off the power or executing any simulation which performs hardware reset.</p> |
| 08 | 01 | <p>Developing bias (Operation/Procedure)</p> <p>When the START key is pressed, the developing bias is outputted for 30 sec.</p> |
| | 02 | <p>Main charger (Grid high) (Operation/Procedure)</p> <p>When the START key is pressed, the main charger output is supplied for 30 sec in the grid voltage HIGH mode.</p> |
| | 03 | <p>Grid voltage (Low) (Operation/Procedure)</p> <p>When the START key is pressed, the main charger output is supplied for 30 sec in the grid voltage LOW mode.</p> |
| | 06 | <p>Transfer charger (Operation/Procedure)</p> <p>When the START key is pressed, the transfer charger output is supplied for 30 sec.</p> |
| 10 | None | <p>Toner motor aging (Operation/Procedure)</p> <p>When the START key is pressed, the toner motor output is supplied for 30 sec.</p> |
| 14 | None | <p>Cancel of troubles other than U2 (Operation/Procedure)</p> <p>After canceling the trouble, the simulation is also automatically canceled.</p> |
| 16 | None | <p>Cancel of U2 trouble (Operation/Procedure)</p> <ol style="list-style-type: none"> 1. When the START key is pressed, the EEPROM total counter check sum is rewritten and the trouble is canceled. 2. After canceling the trouble, the simulation is also automatically canceled. |
| 22 | 04 | <p>JAM total counter display</p> <p>The display method is the same as the total count value display.</p> |
| | 05 | <p>Total counter display</p> <p>The total count value is displayed in 3 digits X 2 times repeatedly. <Display example: 12345></p> <p>012 → Blank → 345 → Blank → 012 0.7s 0.3s 0.7s 1.0s 0.7s</p> |
| | 08 | <p>SPF counter display</p> <p>The display method is the same as the total count value display.</p> |
| | 12 | <p>Drum counter display</p> <p>The display method is the same as the total count value display.</p> |
| | 14 | <p>P-ROM version display</p> <p>The main code and the sub code of the P-ROM version is displayed on the value display section in 2 digits alternately. The display method is the same as the total count value display.</p> |
| | 17 | <p>Copy counter display</p> <p>The display method is the same as the total count value display.</p> |
| | 18 | <p>Printer counter display</p> <p>The display method is the same as the total count value display.</p> |
| | 19 | <p>Scanner mode counter display</p> <p>The display method is the same as the total count value display.</p> |
| | 21 | <p>Scanner counter display</p> <p>The display method is the same as the total count value display.</p> |
| | 22 | <p>SPF JAM counter display</p> <p>The display method is the same as the total count value display.</p> |

| Main code | Sub code | Content | | | | | | | |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|-------------------------|---------------|----------------------|--------------|----------------|
| 24 | 01 | JAM total counter clear When the PRINT switch is pressed, the JAM total count value is reset to 0. | | | | | | | |
| | 04 | SPF counter clear When the PRINT switch is pressed, the SPF count value is reset to 0. | | | | | | | |
| | 07 | Drum counter clear When the PRINT switch is pressed, the drum count value is reset to 0. | | | | | | | |
| | 08 | Copy counter clear When the PRINT switch is pressed, the copy count value is reset to 0. | | | | | | | |
| | 09 | Printer counter clear When the PRINT switch is pressed, the printer count value is reset to 0. | | | | | | | |
| | 13 | Scanner counter clear When the PRINT switch is pressed, the scanner count value is reset to 0. | | | | | | | |
| | 14 | SPF JAM total counter clear When the PRINT switch is pressed, the SPF JAM total count value is reset to 0. | | | | | | | |
| | 15 | Scanner mode counter clear When the PRINT switch is pressed, the scanner mode counter is reset to 0. | | | | | | | |
| 25 | 01 | Main motor operation check (Cooling fan motor rotation check) When the PRINT switch is pressed, the main motor (as well as the duplex motor in the duplex model) is operated for 30 sec. If the developing unit is installed at that time, the developing bias, the main charger, and the grid are outputted together in order to avoid toner consumption. Since, in this case, laser discharge is required when stopping the motor, the polygon motor is rotated at the same time. If the developing unit is not installed, the above high voltage is not outputted and only the motor is rotated. ☆ : Do not execute this simulation by forcibly turning ON the door ON/OFF switch. | | | | | | | |
| | 10 | Polygon motor ON (Operation/Procedure) When the START key is pressed, the polygon motor is operated for 30 sec. | | | | | | | |
| 26 | 01 | Manual feed setup (Operation/Procedure) 1. When this simulation is executed, the currently set bypass code number is displayed. 2. Enter the code number corresponding to the bypass and press the START key, and the setting will be changed. <table><tr><td>Code number</td><td>Bypass</td></tr><tr><td>0</td><td>Single bypass</td></tr><tr><td>1</td><td>Multi bypass</td></tr></table> | Code number | Bypass | 0 | Single bypass | 1 | Multi bypass | |
| | Code number | Bypass | | | | | | | |
| | 0 | Single bypass | | | | | | | |
| 1 | Multi bypass | | | | | | | | |
| 02 | (R) SPF setup When this simulation is executed, the current setup of the SPF code number is displayed. Enter the code number corresponding to the SPF and press the PRINT switch to enable the setup. <table><tr><td>Code number</td><td>SPF</td></tr><tr><td>0</td><td>SPF not installed</td></tr><tr><td>1</td><td>SPF installed</td></tr><tr><td>2</td><td>RSPF installed</td></tr></table> | Code number | SPF | 0 | SPF not installed | 1 | SPF installed | 2 | RSPF installed |
| Code number | SPF | | | | | | | | |
| 0 | SPF not installed | | | | | | | | |
| 1 | SPF installed | | | | | | | | |
| 2 | RSPF installed | | | | | | | | |
| 03 | Second cassette setup (Operation/Procedure) 1. When this simulation is executed, the currently set code number of the second cassette is displayed. 2. Enter the code number and press the start key. The setting is changed. <table><tr><td>Code number</td><td>Second cassette</td></tr><tr><td>0</td><td>Without second cassette</td></tr><tr><td>1</td><td>With second cassette</td></tr></table> | Code number | Second cassette | 0 | Without second cassette | 1 | With second cassette | | |
| Code number | Second cassette | | | | | | | | |
| 0 | Without second cassette | | | | | | | | |
| 1 | With second cassette | | | | | | | | |
| 04 | Machine duplex setup (Operation/Procedure) 1. When this simulation is executed, the currently set duplex code number is displayed. 2. Enter the code number corresponding to the duplex and press the ENTER key, and the setup will be changed. <table><tr><td>Code number</td><td>Duplex</td></tr><tr><td>0</td><td>Without Duplex</td></tr><tr><td>1</td><td>With Duplex</td></tr></table> | Code number | Duplex | 0 | Without Duplex | 1 | With Duplex | | |
| Code number | Duplex | | | | | | | | |
| 0 | Without Duplex | | | | | | | | |
| 1 | With Duplex | | | | | | | | |

| Main code | Sub code | Content | | | | | | | | | | | | |
|-------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|--------|-----------------------------------------------------|--------|----------------------------------|--------|-----------------|--------|----------------------------------------------------|--------|----|
| 26 | 06 | <p>Destination setup</p> <p>When this simulation is executed, the current setup of the destination code number is displayed. Enter the code number corresponding to the destination and press the PRINT switch to enable the setup.</p> <table><tr><th>Code number</th><th>Destination</th></tr><tr><td>0</td><td>Inch series</td></tr><tr><td>1</td><td>EX JAPAN AB series</td></tr><tr><td>2</td><td>JAPAN AB series</td></tr><tr><td>3</td><td>China (EX JAPAN AB series + Chinese paper support)</td></tr></table> | Code number | Destination | 0 | Inch series | 1 | EX JAPAN AB series | 2 | JAPAN AB series | 3 | China (EX JAPAN AB series + Chinese paper support) | | |
| Code number | Destination | | | | | | | | | | | | | |
| 0 | Inch series | | | | | | | | | | | | | |
| 1 | EX JAPAN AB series | | | | | | | | | | | | | |
| 2 | JAPAN AB series | | | | | | | | | | | | | |
| 3 | China (EX JAPAN AB series + Chinese paper support) | | | | | | | | | | | | | |
| 07 | | <p>Machine conditions check</p> <p>When this simulation is executed, the current machine setup is displayed.</p> <table><tr><th>CPM</th><th>Copy quantity display</th></tr><tr><td>10 cpm</td><td>10</td></tr><tr><td>12 cpm</td><td>12</td></tr><tr><td>13 cpm</td><td>13</td></tr><tr><td>14 cpm</td><td>14</td></tr><tr><td>15 cpm</td><td>15</td></tr></table> | CPM | Copy quantity display | 10 cpm | 10 | 12 cpm | 12 | 13 cpm | 13 | 14 cpm | 14 | 15 cpm | 15 |
| CPM | Copy quantity display | | | | | | | | | | | | | |
| 10 cpm | 10 | | | | | | | | | | | | | |
| 12 cpm | 12 | | | | | | | | | | | | | |
| 13 cpm | 13 | | | | | | | | | | | | | |
| 14 cpm | 14 | | | | | | | | | | | | | |
| 15 cpm | 15 | | | | | | | | | | | | | |
| 20 | | <p>Rear edge void setup</p> <p>When this simulation is executed, the current setup of the rear edge void code number is displayed. Enter the code number corresponding to the rear edge void and press the PRINT switch to enable the setup.</p> <table><tr><th>Code number</th><th>Rear edge void setup</th></tr><tr><td>0</td><td>Rear edge void provided * Default</td></tr><tr><td>1</td><td>Rear edge void not provided</td></tr></table> | Code number | Rear edge void setup | 0 | Rear edge void provided * Default | 1 | Rear edge void not provided | | | | | | |
| Code number | Rear edge void setup | | | | | | | | | | | | | |
| 0 | Rear edge void provided * Default | | | | | | | | | | | | | |
| 1 | Rear edge void not provided | | | | | | | | | | | | | |
| 30 | | <p>CE mark support control ON/OFF</p> <p>When this simulation is executed, the current setup of the CE mark support code number is displayed. Enter the code number corresponding to the CE mark support setup and press the PRINT switch to enable the setup.</p> <table><tr><th>Code number</th><th>CE mark support setup</th></tr><tr><td>0</td><td>CE mark support control OFF * Default (100V series)</td></tr><tr><td>1</td><td>CE mark support control ON</td></tr></table> <p>The default for CE-support 200V series is “1.”</p> | Code number | CE mark support setup | 0 | CE mark support control OFF * Default (100V series) | 1 | CE mark support control ON | | | | | | |
| Code number | CE mark support setup | | | | | | | | | | | | | |
| 0 | CE mark support control OFF * Default (100V series) | | | | | | | | | | | | | |
| 1 | CE mark support control ON | | | | | | | | | | | | | |
| 38 | | <p>Cancel of stop at drum life over</p> <p>When this simulation is executed, the current setup of the code number is displayed. Enter the code number and press the PRINT switch to enable the setup.</p> <table><tr><th>Code number</th><th>Setup</th></tr><tr><td>0</td><td>Stop at drum life over * Default (AL model)</td></tr><tr><td>1</td><td>Cancel of stop at drum life over</td></tr></table> | Code number | Setup | 0 | Stop at drum life over * Default (AL model) | 1 | Cancel of stop at drum life over | | | | | | |
| Code number | Setup | | | | | | | | | | | | | |
| 0 | Stop at drum life over * Default (AL model) | | | | | | | | | | | | | |
| 1 | Cancel of stop at drum life over | | | | | | | | | | | | | |
| 39 | | <p>Memory capacity check</p> <p>When this simulation is executed, the current memory capacity is displayed.</p> <table><tr><th>Code number</th><th>Setup</th></tr><tr><td>8</td><td>8 Mbyte</td></tr><tr><td>16</td><td>16 Mbyte</td></tr></table> | Code number | Setup | 8 | 8 Mbyte | 16 | 16 Mbyte | | | | | | |
| Code number | Setup | | | | | | | | | | | | | |
| 8 | 8 Mbyte | | | | | | | | | | | | | |
| 16 | 16 Mbyte | | | | | | | | | | | | | |
| 40 | | <p>Polygon motor OFF time setup (Time required for turning OFF after completion of printing)</p> <p>When this simulation is executed, the current setup of the code number is displayed. Enter the code number and press the PRINT switch to enable the setup.</p> <table><tr><th>Code number</th><th>Setup</th></tr><tr><td>0</td><td>0 sec</td></tr><tr><td>1</td><td>30 sec * Default</td></tr><tr><td>2</td><td>60 sec</td></tr><tr><td>3</td><td>90 sec</td></tr></table> | Code number | Setup | 0 | 0 sec | 1 | 30 sec * Default | 2 | 60 sec | 3 | 90 sec | | |
| Code number | Setup | | | | | | | | | | | | | |
| 0 | 0 sec | | | | | | | | | | | | | |
| 1 | 30 sec * Default | | | | | | | | | | | | | |
| 2 | 60 sec | | | | | | | | | | | | | |
| 3 | 90 sec | | | | | | | | | | | | | |

| Main code | Sub code | Content | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------|---|-----------------------------------|---|-------------------------------------------------------------|---|----------|---|----------|---|------------------|---|--------------------|---|----------|---|----------|---|----------|---|----------|----|--------|
| 26 | 42 | <p>Transfer ON timing control setup (Operation/Procedure)</p> <p>1. When this simulation is executed, the currently set code number is displayed.</p> <p>2. Enter the code number and press the START key, and the setting will be changed. (For any number different from the following ones, the default time is automatically set.)</p> <table><tr><th>Code number</th><th>Setting</th></tr><tr><td>0</td><td>Default (330 msec)</td></tr><tr><td>1</td><td>-40 msec</td></tr><tr><td>2</td><td>-30 msec</td></tr><tr><td>3</td><td>-20 msec</td></tr><tr><td>4</td><td>-10 msec</td></tr><tr><td>5</td><td>Default (330 msec)</td></tr><tr><td>6</td><td>+10 msec</td></tr><tr><td>7</td><td>+20 msec</td></tr><tr><td>8</td><td>+30 msec</td></tr><tr><td>9</td><td>+40 msec</td></tr></table> | Code number | Setting | 0 | Default (330 msec) | 1 | -40 msec | 2 | -30 msec | 3 | -20 msec | 4 | -10 msec | 5 | Default (330 msec) | 6 | +10 msec | 7 | +20 msec | 8 | +30 msec | 9 | +40 msec | | |
| Code number | Setting | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | Default (330 msec) | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | -40 msec | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | -30 msec | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | -20 msec | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | -10 msec | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Default (330 msec) | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | +10 msec | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | +20 msec | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | +30 msec | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | +40 msec | | | | | | | | | | | | | | | | | | | | | | | | | |
| 43 | | <p>Side void setup (Operation/Procedure)</p> <p>1. When this simulation is executed, the currently set code number of the side void amount is displayed.</p> <p>2. Enter the code number and press the start key. The setting is changed.</p> <table><tr><th>Code number</th><th>Setting</th></tr><tr><td>0</td><td>0 mm</td></tr><tr><td>1</td><td>0.5 mm</td></tr><tr><td>2</td><td>1.0 mm</td></tr><tr><td>3</td><td>1.5 mm</td></tr><tr><td>4</td><td>2.0 mm * Default</td></tr><tr><td>5</td><td>2.5 mm</td></tr><tr><td>6</td><td>3.0 mm</td></tr><tr><td>7</td><td>3.5 mm</td></tr><tr><td>8</td><td>4.0 mm</td></tr><tr><td>9</td><td>4.5 mm</td></tr><tr><td>10</td><td>5.0 mm</td></tr></table> | Code number | Setting | 0 | 0 mm | 1 | 0.5 mm | 2 | 1.0 mm | 3 | 1.5 mm | 4 | 2.0 mm * Default | 5 | 2.5 mm | 6 | 3.0 mm | 7 | 3.5 mm | 8 | 4.0 mm | 9 | 4.5 mm | 10 | 5.0 mm |
| Code number | Setting | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.5 mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 1.0 mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 1.5 mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 2.0 mm * Default | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 2.5 mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 3.0 mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 3.5 mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 4.0 mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 4.5 mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 5.0 mm | | | | | | | | | | | | | | | | | | | | | | | | | |
| 44 | | <p>SPF document rear edge read setup + Fax document rear edge scan setup.</p> <p>When this simulation is executed, the currently set code number is displayed. Enter the desired code number and press the START key, and the display will be changed. The document rear edge scanning area in SPF reduction (less than 100%) copy is changed. The code number is changeable in the range of 0 – 8.</p> <p>The default value is 4, and 2 mm of the document rear edge is cut.</p> <p>When the value is changed by 1, the area is changed by 1 mm.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| 62 | | <p>Energy-save mode copy lamp setup</p> <p>Used to set half-ON (50%)/OFF of the copy lamp in the pre-heat mode.</p> <p>When this simulation is executed, the current setup of the code number is displayed. Enter the code number and press the PRINT switch to enable the setup.</p> <table><tr><th>Code number</th><th>Setup</th></tr><tr><td>0</td><td>Copy lamp half-ON (50%) * Default</td></tr><tr><td>1</td><td>Copy lamp OFF</td></tr></table> | Code number | Setup | 0 | Copy lamp half-ON (50%) * Default | 1 | Copy lamp OFF | | | | | | | | | | | | | | | | | | |
| Code number | Setup | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | Copy lamp half-ON (50%) * Default | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Copy lamp OFF | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63 | | <p>Fan control select setup</p> <p>Used to set the cooling fan operation mode.</p> <p>When this simulation is executed, the current setup of the code number is displayed. Enter the code number and press the PRINT switch to enable the setup.</p> <table><tr><th>Code number</th><th>Setup</th></tr><tr><td>1</td><td>1-speed fan control</td></tr><tr><td>2</td><td>2-speed fan control * Default when starting mass production</td></tr></table> | Code number | Setup | 1 | 1-speed fan control | 2 | 2-speed fan control * Default when starting mass production | | | | | | | | | | | | | | | | | | |
| Code number | Setup | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1-speed fan control | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 2-speed fan control * Default when starting mass production | | | | | | | | | | | | | | | | | | | | | | | | | |

| Main code | Sub code | Content | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------|-----------------------------------|--------------------------------------|------------------------------------|----------|-------------------------|-------------------------------------------|----------------------------|-------------------|----------------------------------|-----------------|---------------------------------------|---------|---|------|---|------|---|------|---|------|
| 30 | 01 | <p>Paper sensor status display</p> <p>Indicates the paper sensor status using the lamps on the operation panel.</p> <table><tr><th>Sensor name</th><th>Display lamp</th></tr><tr><td>Before-resist paper sensor (PPD1)</td><td>Developer cartridge replacement lamp</td></tr><tr><td>Fusing section paper sensor (PPD2)</td><td>JAM lamp</td></tr><tr><td>Paper exit sensor (POD)</td><td>Photoconductor cartridge replacement lamp</td></tr><tr><td>2nd CS paper sensor (PPD3)</td><td>2nd cassette lamp</td></tr><tr><td>New drum cartridge sensor (PUIS)</td><td>Zoom lamp</td></tr><tr><td>Single manual feed paper sensor (MFD)</td><td>AE lamp</td></tr></table> | Sensor name | Display lamp | Before-resist paper sensor (PPD1) | Developer cartridge replacement lamp | Fusing section paper sensor (PPD2) | JAM lamp | Paper exit sensor (POD) | Photoconductor cartridge replacement lamp | 2nd CS paper sensor (PPD3) | 2nd cassette lamp | New drum cartridge sensor (PUIS) | Zoom lamp | Single manual feed paper sensor (MFD) | AE lamp | | | | | | | | |
| Sensor name | Display lamp | | | | | | | | | | | | | | | | | | | | | | | |
| Before-resist paper sensor (PPD1) | Developer cartridge replacement lamp | | | | | | | | | | | | | | | | | | | | | | | |
| Fusing section paper sensor (PPD2) | JAM lamp | | | | | | | | | | | | | | | | | | | | | | | |
| Paper exit sensor (POD) | Photoconductor cartridge replacement lamp | | | | | | | | | | | | | | | | | | | | | | | |
| 2nd CS paper sensor (PPD3) | 2nd cassette lamp | | | | | | | | | | | | | | | | | | | | | | | |
| New drum cartridge sensor (PUIS) | Zoom lamp | | | | | | | | | | | | | | | | | | | | | | | |
| Single manual feed paper sensor (MFD) | AE lamp | | | | | | | | | | | | | | | | | | | | | | | |
| 43 | 01 | <p>Fusing temperature setup (Normal copy)</p> <p>(Operation/Procedure)</p> <p>1. When this simulation is executed, the currently set code number is displayed.</p> <p>2. Enter the code number and press the START key, and the setting will be changed.</p> <table><tr><th>Code number</th><th>Set temperature (°C)</th></tr><tr><td>0</td><td>175</td></tr><tr><td>1</td><td>180</td></tr><tr><td>2</td><td>185</td></tr><tr><td>3</td><td>190</td></tr><tr><td>4</td><td>195 (* Default)</td></tr><tr><td>5</td><td>200</td></tr></table> | Code number | Set temperature (°C) | 0 | 175 | 1 | 180 | 2 | 185 | 3 | 190 | 4 | 195 (* Default) | 5 | 200 | | | | | | | | |
| Code number | Set temperature (°C) | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 175 | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 180 | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 185 | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 190 | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 195 (* Default) | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 200 | | | | | | | | | | | | | | | | | | | | | | | |
| | 04 | <p>Fusing temperature setup 2</p> <p>(Operation/Procedure)</p> <p>1. When this simulation is executed, the currently set code number is displayed.</p> <p>2. Enter the code number and press the START key, and the setting will be changed.</p> <table><tr><th>Code number</th><th>Set temperature (°C)</th></tr><tr><td>0</td><td>155</td></tr><tr><td>1</td><td>160</td></tr><tr><td>2</td><td>165</td></tr><tr><td>3</td><td>170 (* Default)</td></tr><tr><td>4</td><td>175</td></tr><tr><td>5</td><td>180</td></tr></table> | Code number | Set temperature (°C) | 0 | 155 | 1 | 160 | 2 | 165 | 3 | 170 (* Default) | 4 | 175 | 5 | 180 | | | | | | | | |
| Code number | Set temperature (°C) | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 155 | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 160 | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 165 | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 170 (* Default) | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 175 | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 180 | | | | | | | | | | | | | | | | | | | | | | | |
| | 05 | <p>Fusing temperature setup in duplex copy</p> <p>In duplex copy, this setup value is added to the fusing temperature of single copy. When this simulation is executed, the current setup of the code number is displayed. Enter the code number and press the PRINT switch to enable the setup.</p> <table><tr><th>Code number</th><th>Temperature shift (°C)</th></tr><tr><td>0</td><td>±0°C * Default</td></tr><tr><td>1</td><td>−8°C</td></tr><tr><td>2</td><td>−6°C</td></tr><tr><td>3</td><td>−4°C</td></tr><tr><td>4</td><td>−2°C</td></tr><tr><td>5</td><td>±0°C</td></tr><tr><td>6</td><td>+2°C</td></tr><tr><td>7</td><td>+4°C</td></tr><tr><td>8</td><td>+6°C</td></tr><tr><td>9</td><td>+8°C</td></tr></table> | Code number | Temperature shift (°C) | 0 | ±0°C * Default | 1 | −8°C | 2 | −6°C | 3 | −4°C | 4 | −2°C | 5 | ±0°C | 6 | +2°C | 7 | +4°C | 8 | +6°C | 9 | +8°C |
| Code number | Temperature shift (°C) | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | ±0°C * Default | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | −8°C | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | −6°C | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | −4°C | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | −2°C | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ±0°C | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | +2°C | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | +4°C | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | +6°C | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | +8°C | | | | | | | | | | | | | | | | | | | | | | | |
| | 09 | <p>Setup of fusing control of postcard size paper</p> <table><tr><th>Code number</th><th>Setup</th></tr><tr><td>0</td><td>Cancel * Default</td></tr><tr><td>1</td><td>Setup</td></tr></table> <p>The default for Japan model is “1.”</p> | Code number | Setup | 0 | Cancel * Default | 1 | Setup | | | | | | | | | | | | | | | | |
| Code number | Setup | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | Cancel * Default | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Setup | | | | | | | | | | | | | | | | | | | | | | | |

| Main code | Sub code | Content | | | | | | | | | | | | |
|-------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------|------------------|--------------|--------------------|----------------|------------|-----------------|-------------------------|----------------------------------|-----------------------|--------------------------------|
| 46 | 01 | <p>Copy density adjustment (300dpi) Used to set the copy density in each mode. (Operating procedure) When this simulation is executed, warm-up and shading operations are performed and the current setup is displayed in two digits (default: 50). Change the setup value with the copy quantity keys. Press the PRINT switch and a copy is made according to the new setup. The greater the setup value is, the darker the copy is. The smaller the setup value is, the brighter the copy is. Only EXP.3 copy is made in this simulation. When set to a darker level, Exp.1 and Exp.5 copies also become darker. When set to a brighter level, Exp.1 and Exp.5 copies also become brighter. Press the CLEAR key to save the setup and exit from the simulation mode. Use the copy mode select key to select a copy mode . The setup value of the selected copy mode is displayed on the copy quantity display. (adjustment range: 0 – 99)</p> <table><tr><th>Copy mode</th><th>Display lamp</th></tr><tr><td>AE mode (300dpi)</td><td>AE mode lamp</td></tr><tr><td>TEXT mode (300dpi)</td><td>TEXT mode lamp</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td></tr><tr><td>TS mode (TEXT) (300dpi)</td><td>TEXT mode lamp & PHOTO mode lamp</td></tr><tr><td>TS mode (AE) (300dpi)</td><td>AE mode lamp & PHOTO mode lamp</td></tr></table> | Copy mode | Display lamp | AE mode (300dpi) | AE mode lamp | TEXT mode (300dpi) | TEXT mode lamp | PHOTO mode | PHOTO mode lamp | TS mode (TEXT) (300dpi) | TEXT mode lamp & PHOTO mode lamp | TS mode (AE) (300dpi) | AE mode lamp & PHOTO mode lamp |
| Copy mode | Display lamp | | | | | | | | | | | | | |
| AE mode (300dpi) | AE mode lamp | | | | | | | | | | | | | |
| TEXT mode (300dpi) | TEXT mode lamp | | | | | | | | | | | | | |
| PHOTO mode | PHOTO mode lamp | | | | | | | | | | | | | |
| TS mode (TEXT) (300dpi) | TEXT mode lamp & PHOTO mode lamp | | | | | | | | | | | | | |
| TS mode (AE) (300dpi) | AE mode lamp & PHOTO mode lamp | | | | | | | | | | | | | |
| | 02 | <p>Copy density adjustment (600dpi) Used to set the copy density in each mode. (Operation/Procedure) When this simulation is executed, the machine performs warm-up and shading, and the current setup value is displayed in two digits. (Default: 50) Use the copy quantity key to change the setup value, and press the PRINT switch to make a copy with the new setup. The greater the setup value is, the darker the copy is, and vice versa. Only EXP.3 copy is made. If it is set to a darker density, EXP.1 and EXP.5 copies also become darker. If it is set to a brighter density, they also become brighter. When the CLEAR key is pressed, the entered setup value is saved and the simulation is terminated. Any copy mode can be selected with the copy mode select key. The setup value of the selected copy mode is displayed on the copy quantity display. (Setup range: 0 – 99)</p> <table><tr><th>Copy mode</th><th>Display lamp</th></tr><tr><td>AE mode (600dpi)</td><td>AE mode lamp</td></tr><tr><td>TEXT mode (600dpi)</td><td>TEXT mode lamp</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td></tr><tr><td>TS mode (TEXT) (600dpi)</td><td>TEXT mode lamp & PHOTO mode lamp</td></tr><tr><td>TS mode (AE) (600dpi)</td><td>AE mode lamp & PHOTO mode lamp</td></tr></table> | Copy mode | Display lamp | AE mode (600dpi) | AE mode lamp | TEXT mode (600dpi) | TEXT mode lamp | PHOTO mode | PHOTO mode lamp | TS mode (TEXT) (600dpi) | TEXT mode lamp & PHOTO mode lamp | TS mode (AE) (600dpi) | AE mode lamp & PHOTO mode lamp |
| Copy mode | Display lamp | | | | | | | | | | | | | |
| AE mode (600dpi) | AE mode lamp | | | | | | | | | | | | | |
| TEXT mode (600dpi) | TEXT mode lamp | | | | | | | | | | | | | |
| PHOTO mode | PHOTO mode lamp | | | | | | | | | | | | | |
| TS mode (TEXT) (600dpi) | TEXT mode lamp & PHOTO mode lamp | | | | | | | | | | | | | |
| TS mode (AE) (600dpi) | AE mode lamp & PHOTO mode lamp | | | | | | | | | | | | | |
| | 18 | <p>Image contrast adjustment (300dpi) Used to set the image contrast in each mode. (Operating procedure) When this simulation is executed, warm-up and shading operations are performed and the current setup value is displayed in two digits. (Default: 50) Change the setup value with the copy quantity keys. Press the PRINT switch and a copy is made according to the new setup. The greater the setup value is, the higher the contrast is. The smaller the setup value is, the lower the contrast is. Though only EXP.3 copy is made in this simulation, the contrast levels in EXP.1 and EXP.5 are also changed. Press the CLEAR key to save the setup and exit from the simulation mode. Use the copy mode select key to select a copy mode . The setup value of the selected copy mode is displayed on the copy quantity display. (adjustment range: 0 – 99)</p> <table><tr><th>Copy mode</th><th>Display lamp</th></tr><tr><td>AE mode (300dpi)</td><td>AE mode lamp</td></tr><tr><td>TEXT mode (300dpi)</td><td>TEXT mode lamp</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td></tr><tr><td>TS mode (TEXT) (300dpi)</td><td>TEXT mode lamp & PHOTO mode lamp</td></tr><tr><td>TS mode (AE) (300dpi)</td><td>AE mode lamp & PHOTO mode lamp</td></tr></table> | Copy mode | Display lamp | AE mode (300dpi) | AE mode lamp | TEXT mode (300dpi) | TEXT mode lamp | PHOTO mode | PHOTO mode lamp | TS mode (TEXT) (300dpi) | TEXT mode lamp & PHOTO mode lamp | TS mode (AE) (300dpi) | AE mode lamp & PHOTO mode lamp |
| Copy mode | Display lamp | | | | | | | | | | | | | |
| AE mode (300dpi) | AE mode lamp | | | | | | | | | | | | | |
| TEXT mode (300dpi) | TEXT mode lamp | | | | | | | | | | | | | |
| PHOTO mode | PHOTO mode lamp | | | | | | | | | | | | | |
| TS mode (TEXT) (300dpi) | TEXT mode lamp & PHOTO mode lamp | | | | | | | | | | | | | |
| TS mode (AE) (300dpi) | AE mode lamp & PHOTO mode lamp | | | | | | | | | | | | | |

| Main code | Sub code | Content | | | | | | | | | | | | | | | | | | | | |
|-------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------|------------------|-----------------------------|--------------------|---------------------------------|-------------|-------------------|-------------------------|----------------------------------|-----------------------|--------------------------------|-----------|----------------|------------|-----------------|----------------|----------------------------------|--------------|--------------------------------|
| 46 | 19 | <p>γ table setup or AE operation mode setup</p> <p>When this simulation is executed, the current setup of the gamma table code number is displayed. (Default: Japan = 1, EX Japan = 2) Enter the code number corresponding to desired gamma table, and press the PRINT switch or the copy mode select key to enable the setup.</p> <table><tr><th>Code number</th><th>γ table</th></tr><tr><td>1</td><td>Image quality priority mode</td></tr><tr><td>2</td><td>Toner consumption priority mode</td></tr></table> <p>When the copy mode select key is pressed during setup of the gamma table, the mode is switched to the AE operation setup mode and the current setup of the AE operation mode code number is displayed. (Default: 0) Enter the code number corresponding to your desired AE operation mode, and press the PRINT switch or the copy mode select key to switch the setup. (When the copy mode select key is pressed, the mode is returned to the gamma table setup mode.)</p> <table><tr><th>Code number</th><th>AE operation mode</th></tr><tr><td>0</td><td>Fixed process * Default</td></tr><tr><td>1</td><td>Real time process</td></tr></table> | Code number | γ table | 1 | Image quality priority mode | 2 | Toner consumption priority mode | Code number | AE operation mode | 0 | Fixed process * Default | 1 | Real time process | | | | | | | | |
| Code number | γ table | | | | | | | | | | | | | | | | | | | | | |
| 1 | Image quality priority mode | | | | | | | | | | | | | | | | | | | | | |
| 2 | Toner consumption priority mode | | | | | | | | | | | | | | | | | | | | | |
| Code number | AE operation mode | | | | | | | | | | | | | | | | | | | | | |
| 0 | Fixed process * Default | | | | | | | | | | | | | | | | | | | | | |
| 1 | Real time process | | | | | | | | | | | | | | | | | | | | | |
| 20 | | <p>SPF exposure correction</p> <p>Used to adjust the exposure correction quantity in the SPF mode by adjusting the differential of Vref voltage for the OC mode. (Operating procedure)</p> <p>When this simulation is executed, the current setup is displayed. Enter the adjustment value with the 10-key and press the PRINT key to enable the setup and make a copy.</p> <p>When the CLEAR key is pressed, the entered value is saved and the simulation mode is terminated.</p> <p>* The greater the value is the darker the exposure is. The smaller the value is, the brighter the exposure is.</p> | | | | | | | | | | | | | | | | | | | | |
| 29 | | <p>Image contrast adjustment (600dpi)</p> <p>Used to set the contrast in each mode. (Operation/Procedure)</p> <p>When this simulation is executed, the machine performs warm-up and shading, and the current setup value is displayed in two digits. (Default: 50)</p> <p>Use the copy quantity keys to change the setup value, and press the PRINT switch to make a copy with the new setup. The greater the setup value is, the greater the contrast is, and vice versa. Only EXP.3 copy is made, however, EXP.1 contrast and EXP.5 contrast are also changed accordingly.</p> <p>When the CLEAR key is pressed, the entered setup value is saved and the simulation is terminated.</p> <p>Any copy mode can be selected with the copy mode select key. The setup value of the selected copy mode is displayed on the copy quantity display. (Setup range: 0 – 99)</p> <table><tr><th>Copy mode</th><th>Display lamp</th></tr><tr><td>AE mode (600dpi)</td><td>AE mode lamp</td></tr><tr><td>TEXT mode (600dpi)</td><td>TEXT mode lamp</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td></tr><tr><td>TS mode (TEXT) (600dpi)</td><td>TEXT mode lamp & PHOTO mode lamp</td></tr><tr><td>TS mode (AE) (600dpi)</td><td>AE mode lamp & PHOTO mode lamp</td></tr></table> | Copy mode | Display lamp | AE mode (600dpi) | AE mode lamp | TEXT mode (600dpi) | TEXT mode lamp | PHOTO mode | PHOTO mode lamp | TS mode (TEXT) (600dpi) | TEXT mode lamp & PHOTO mode lamp | TS mode (AE) (600dpi) | AE mode lamp & PHOTO mode lamp | | | | | | | | |
| Copy mode | Display lamp | | | | | | | | | | | | | | | | | | | | | |
| AE mode (600dpi) | AE mode lamp | | | | | | | | | | | | | | | | | | | | | |
| TEXT mode (600dpi) | TEXT mode lamp | | | | | | | | | | | | | | | | | | | | | |
| PHOTO mode | PHOTO mode lamp | | | | | | | | | | | | | | | | | | | | | |
| TS mode (TEXT) (600dpi) | TEXT mode lamp & PHOTO mode lamp | | | | | | | | | | | | | | | | | | | | | |
| TS mode (AE) (600dpi) | AE mode lamp & PHOTO mode lamp | | | | | | | | | | | | | | | | | | | | | |
| 31 | | <p>Image sharpness adjustment</p> <p>Used to adjust the clear/shading-off of an image in each mode. (Operating procedure)</p> <p>When this simulation is executed, warm-up and shading operations are performed and the current setup value is displayed. (Default: 1) Change the setup value with the copy quantity keys. Press the PRINT switch and a copy is made according to the new setup. When the clear key is pressed, the entered setup value is saved and the simulation is terminated.</p> <table><tr><th>Setup value</th><th>Image quality</th></tr><tr><td>0</td><td>Shading off</td></tr><tr><td>1</td><td>Standard * Default</td></tr><tr><td>2</td><td>Clear</td></tr></table> <p>Any desired copy mode can be selected with the copy mode select key. The code number of the selected copy mode is displayed on the copy quantity display.</p> <table><tr><th>Copy mode</th><th>Display lamp</th></tr><tr><td>AE mode</td><td>AE mode lamp</td></tr><tr><td>TEXT mode</td><td>TEXT mode lamp</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td></tr><tr><td>TS mode (TEXT)</td><td>TEXT mode lamp & PHOTO mode lamp</td></tr><tr><td>TS mode (AE)</td><td>AE mode lamp & PHOTO mode lamp</td></tr></table> | Setup value | Image quality | 0 | Shading off | 1 | Standard * Default | 2 | Clear | Copy mode | Display lamp | AE mode | AE mode lamp | TEXT mode | TEXT mode lamp | PHOTO mode | PHOTO mode lamp | TS mode (TEXT) | TEXT mode lamp & PHOTO mode lamp | TS mode (AE) | AE mode lamp & PHOTO mode lamp |
| Setup value | Image quality | | | | | | | | | | | | | | | | | | | | | |
| 0 | Shading off | | | | | | | | | | | | | | | | | | | | | |
| 1 | Standard * Default | | | | | | | | | | | | | | | | | | | | | |
| 2 | Clear | | | | | | | | | | | | | | | | | | | | | |
| Copy mode | Display lamp | | | | | | | | | | | | | | | | | | | | | |
| AE mode | AE mode lamp | | | | | | | | | | | | | | | | | | | | | |
| TEXT mode | TEXT mode lamp | | | | | | | | | | | | | | | | | | | | | |
| PHOTO mode | PHOTO mode lamp | | | | | | | | | | | | | | | | | | | | | |
| TS mode (TEXT) | TEXT mode lamp & PHOTO mode lamp | | | | | | | | | | | | | | | | | | | | | |
| TS mode (AE) | AE mode lamp & PHOTO mode lamp | | | | | | | | | | | | | | | | | | | | | |

| Main code | Sub code | Content | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 46 | 32 | <p>Copier color reproduction setup Used to set color reproduction for each mode. Colors which are easily copied or which are not easily copied are selected.</p> <table><tr><th>Setup value</th><th>Easy-to-copy colors</th><th>Difficult-to-copy colors</th></tr><tr><td>0</td><td>Purple/Blue/Red</td><td>Yellow/Green/Light blue</td></tr><tr><td>1</td><td>Light blue/Green/Blue</td><td>Purple/Red/Yellow</td></tr><tr><td>2</td><td>Yellow/Red/Green</td><td>Blue/Light blue/Purple</td></tr></table> <p>* This setup does not affect black-and-white copies.</p> <p>(Operating procedure) When this simulation is executed, the current setup of the code number for each copy mode is displayed. (Default: 0) Change the setup value with the copy quantity keys and press the Print switch. A copy will be made according to the setup. At that time, the color component used for copying is changed. When the clear key is pressed, the entered code number is saved and the simulation mode is terminated. Any desired copy mode can be selected with the copy mode select key. The selected copy mode is displayed on the copy quantity display.</p> <table><tr><th>Code number</th><th>Component of use</th></tr><tr><td>0</td><td>Green * Default</td></tr><tr><td>1</td><td>Red</td></tr><tr><td>2</td><td>Blue</td></tr></table> <table><tr><th>Copy mode</th><th>Display lamp</th></tr><tr><td>AE mode (including TS)</td><td>AE mode lamp</td></tr><tr><td>TEXT mode (including TS)</td><td>TEXT mode lamp</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td></tr></table> | Setup value | Easy-to-copy colors | Difficult-to-copy colors | 0 | Purple/Blue/Red | Yellow/Green/Light blue | 1 | Light blue/Green/Blue | Purple/Red/Yellow | 2 | Yellow/Red/Green | Blue/Light blue/Purple | Code number | Component of use | 0 | Green * Default | 1 | Red | 2 | Blue | Copy mode | Display lamp | AE mode (including TS) | AE mode lamp | TEXT mode (including TS) | TEXT mode lamp | PHOTO mode | PHOTO mode lamp |
| Setup value | Easy-to-copy colors | Difficult-to-copy colors | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | Purple/Blue/Red | Yellow/Green/Light blue | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Light blue/Green/Blue | Purple/Red/Yellow | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Yellow/Red/Green | Blue/Light blue/Purple | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Code number | Component of use | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | Green * Default | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Red | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Blue | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Copy mode | Display lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AE mode (including TS) | AE mode lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEXT mode (including TS) | TEXT mode lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PHOTO mode | PHOTO mode lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | 01 | <p>Front/rear (main scanning) direction and scan (sub scanning) direction magnification ratio adjustment (1) Front/rear direction magnification ratio auto correction: The width of the reference line marked on the shading correction plate is scanned to perform automatic correction of the front/rear (main scanning) direction magnification ratio as well as automatic setup of the OC/document center offset value and of the image scan start position. The OC/document center offset value and the image scan start position automatically set in this simulation, can be checked by the respective manual setup simulation for each adjustment shown below.</p> <table><tr><td>OC/document center offset</td><td>→</td><td>Sim50-10</td><td>Center offset adjustment</td></tr><tr><td>Image scan start position</td><td>→</td><td>Sim50-01</td><td>Lead edge image position</td></tr></table> <p>(2) Front/rear direction magnification ratio manual correction: By key operations, the front/rear (main scanning) direction magnification ratio is set by changing the setup value of the ZOOM DATA register to AISC. (3) Scan direction magnification ratio correction: The scan direction magnification ratio in the OC mode is set by changing the scan speed. (4) SPF mode scan direction magnification ratio correction: The SPF mode scan direction magnification ratio is set by changing the scan speed.</p> <p>(Operating procedure) When this simulation is executed, the current setup value is displayed in two digits. (Center value: 50) Press the copy mode select key to select each setup mode and the setup display will change accordingly. In the case of the front/rear direction automatic adjustment, when the PRINT switch is pressed, the mirror base unit moves to the shading white board, and the width of the reference line is scanned, and the correction value is calculated, and the value is saved. For manual adjustment, enter the adjustment value with the 10-key and press the PRINT switch, the set value will be saved and a copy will be made. When the clear key is pressed, the value entered will be saved and the simulation will be terminated. (Increasing the setup value by 1 increases 0.1%.)</p> <table><tr><th>Adjustment mode</th><th>Lamp ON</th></tr><tr><td>Front/rear direction magnification ratio automatic correction</td><td>AE lamp</td></tr><tr><td>Front/rear direction magnification ratio manual correction</td><td>TEXT lamp</td></tr><tr><td>Scan direction magnification ratio correction</td><td>PHOTO lamp</td></tr><tr><td>SPF mode scan direction magnification ratio correction</td><td>AE, TEXT, PHOTO lamps</td></tr></table> <p>In the front/rear direction magnification ratio automatic correction (1) When the calculated value of the scan correction value is within ±5%, “- -” is displayed. (Cause) Erroneous position of the reference line on the white board, improper installation of the lens unit, etc. (2) In case of a scan error of the reference line, the jam lamp lights up. (Cause) CCD error, no white board installed.</p> <p>* If the automatic correction of the magnification ratio cannot provide a satisfactory result, use the manual correction.</p> | OC/document center offset | → | Sim50-10 | Center offset adjustment | Image scan start position | → | Sim50-01 | Lead edge image position | Adjustment mode | Lamp ON | Front/rear direction magnification ratio automatic correction | AE lamp | Front/rear direction magnification ratio manual correction | TEXT lamp | Scan direction magnification ratio correction | PHOTO lamp | SPF mode scan direction magnification ratio correction | AE, TEXT, PHOTO lamps | | | | | | | | | | |
| OC/document center offset | → | Sim50-10 | Center offset adjustment | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Image scan start position | → | Sim50-01 | Lead edge image position | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adjustment mode | Lamp ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Front/rear direction magnification ratio automatic correction | AE lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Front/rear direction magnification ratio manual correction | TEXT lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Scan direction magnification ratio correction | PHOTO lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SPF mode scan direction magnification ratio correction | AE, TEXT, PHOTO lamps | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Main code | Sub code | Content | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------|-------------------------------------------------|------------------------|--------------------------------------------------|-----------------------|------------------------------------------|----------------------|-------------------------------|-----------|---------------------------|------------|-------------------------------|----------------------|---------------------------------|---------------|--------------------------------|--------|-------|-------|-----------|--------|----|----|-------------------|----------|-----|-----|-------------|----------|-----|-----|---|----------------------|---|--------------------------|---|------------------|---|----------------------------------|---|-------------------------------------|---|----------------------------|---|--------------------------|---|-----------------------------|
| 49 | 01 | <p>Flash ROM program writing mode (Operating procedure)</p> <p>When this simulation is executed, “d” is displayed on the display and the machine enters the Flash ROM program writing mode. Use the writing tool to write the program from PC. During writing, the display indicates as shown below. After completion of downloading, turn OFF/ON the power to reset.</p> <table><tr><th>Status</th><th>Display</th><th>Pre-heat lamp</th><th>Ready lamp</th></tr><tr><td>Download data reception</td><td>“d” ON</td><td>ON</td><td>OFF</td></tr><tr><td>Data erase start</td><td>“d” ON</td><td>OFF</td><td>ON</td></tr><tr><td>Data writing (Boot section)</td><td>“d” ON</td><td>Blink</td><td>OFF</td></tr><tr><td>Data writing (program section)</td><td>“d” ON</td><td>Blink</td><td>Blink</td></tr><tr><td>Sum check</td><td>“d” ON</td><td>ON</td><td>ON</td></tr><tr><td>Download complete</td><td>“OFF” ON</td><td>OFF</td><td>OFF</td></tr><tr><td>Error state</td><td>“E *” ON</td><td>OFF</td><td>OFF</td></tr></table> <p>* “*” in an error display indicates the error position.</p> <table><tr><td>1</td><td>Data reception error</td></tr><tr><td>2</td><td>Loader function transfer</td></tr><tr><td>3</td><td>FLASH ROM delete</td></tr><tr><td>4</td><td>FLASH ROM writing (Boot section)</td></tr><tr><td>5</td><td>FLASH ROM writing (Program section)</td></tr><tr><td>6</td><td>Sum check (Loader section)</td></tr><tr><td>7</td><td>Sum check (Boot section)</td></tr><tr><td>8</td><td>Sum check (Program section)</td></tr></table> | Status | Display | Pre-heat lamp | Ready lamp | Download data reception | “d” ON | ON | OFF | Data erase start | “d” ON | OFF | ON | Data writing (Boot section) | “d” ON | Blink | OFF | Data writing (program section) | “d” ON | Blink | Blink | Sum check | “d” ON | ON | ON | Download complete | “OFF” ON | OFF | OFF | Error state | “E *” ON | OFF | OFF | 1 | Data reception error | 2 | Loader function transfer | 3 | FLASH ROM delete | 4 | FLASH ROM writing (Boot section) | 5 | FLASH ROM writing (Program section) | 6 | Sum check (Loader section) | 7 | Sum check (Boot section) | 8 | Sum check (Program section) |
| Status | Display | Pre-heat lamp | Ready lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Download data reception | “d” ON | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data erase start | “d” ON | OFF | ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data writing (Boot section) | “d” ON | Blink | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data writing (program section) | “d” ON | Blink | Blink | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum check | “d” ON | ON | ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Download complete | “OFF” ON | OFF | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Error state | “E *” ON | OFF | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Data reception error | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Loader function transfer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | FLASH ROM delete | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | FLASH ROM writing (Boot section) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | FLASH ROM writing (Program section) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Sum check (Loader section) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Sum check (Boot section) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Sum check (Program section) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 01 | <p>Lead edge image position</p> <p>Used to adjust the copy image position and the lead edge void quantity on the copy paper. The adjustment is made by adjusting the image scan start position and the print start position (resist roller ON timing) at 100%. (Operating procedure)</p> <p>When this simulation is executed, the current setup value is displayed the current setup value is displayed in two digits. (Center value: 50) Press the copy mode select key to select your desired coy mode, and the display will change. Enter the adjustment value with the 10-key and press the PRINT switch, and the setup value will be saved and a copy will be made. Press the clear key to save the setup value and exit from the simulation mode. When the adjustment is made for the main cassette feed, all the adjustment values at all the paper feed ports become the same. (Increasing the setup value by 1 corresponds to about 0.1mm shift.)</p> <table><tr><th>Adjustment mode</th><th>Lamp ON</th></tr><tr><td>Print start position (Main cassette paper feed)</td><td>AE, main cassette lamp</td></tr><tr><td>☆ Print start position (2nd cassette paper feed)</td><td>AE, 2nd cassette lamp</td></tr><tr><td>Print start position (Manual paper feed)</td><td>AE, manual feed lamp</td></tr><tr><td>Image lead edge void quantity</td><td>TEXT lamp</td></tr><tr><td>Image scan start position</td><td>PHOTO lamp</td></tr><tr><td>Image rear edge void quantity</td><td>AE, TEXT, PHOTO lamp</td></tr><tr><td>☆ SPF image scan start position</td><td>AE, TEXT lamp</td></tr></table> <p>☆ : Supported if the model is installed and skipped if it is not installed.</p> <p>(Adjustment procedure)</p> <div><div><div>AE ON</div><div>↓</div></div><div><div>TEXT ON</div><div>↓</div></div><div><div>PHOTO ON</div><div>↓</div></div></div> <div><div><div>1. Set the print start position (A), the lead edge void quantity (B) and the scan start position (C) to 0, and make a copy at 100%.</div><div>2. Measure the image loss quantity (R mm) of the scale. Set C = 10 × R (mm) (Example: Set 40.) When the value C is increased by 10, the image loss is decreased by 1mm. (Default: 50)</div><div>3. Measure the distance (H mm) from the paper lead edge to the image print start position. Set A = 10 × H (mm) (Example: set 50) When the value A is increased by 1mm, the image lead edge is shifted to the paper lead edge by 1mm. (Default: 50)</div><div>4. Set the lead edge void quantity to B = 50 (2.5mm). (Default: 50) When the value B is increased by 10, the void is increased by about 1mm. (When set to 25 or less, the void becomes zero.)</div></div><div>* The SPF adjustment is performed by adjusting the SPF image scan start position.</div><div><div>(Example)</div><div><div>Distance from the paper lead edge to the image lead edge: H = 5mm</div><div>Image loss: R = 4mm</div></div></div></div> | Adjustment mode | Lamp ON | Print start position (Main cassette paper feed) | AE, main cassette lamp | ☆ Print start position (2nd cassette paper feed) | AE, 2nd cassette lamp | Print start position (Manual paper feed) | AE, manual feed lamp | Image lead edge void quantity | TEXT lamp | Image scan start position | PHOTO lamp | Image rear edge void quantity | AE, TEXT, PHOTO lamp | ☆ SPF image scan start position | AE, TEXT lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adjustment mode | Lamp ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Print start position (Main cassette paper feed) | AE, main cassette lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ☆ Print start position (2nd cassette paper feed) | AE, 2nd cassette lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Print start position (Manual paper feed) | AE, manual feed lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Image lead edge void quantity | TEXT lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Image scan start position | PHOTO lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Image rear edge void quantity | AE, TEXT, PHOTO lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ☆ SPF image scan start position | AE, TEXT lamp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Main code | Sub code | Content | | | | | | | | | | | | | | |
|-------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------|------------------------------------------------|------------------------|-------------------------------------------------|-----------------------|-----------------------------------------|----------------------------|------------------------------|----------------------|-------------------------------------------|----------------------|---------------|------------------|
| 50 | 10 | <p>Center offset adjustment Used to adjust the copy image position on the copy paper and the center offset position when scanning a document. (Operating procedure) When this simulation is executed, the current setup value is displayed. Enter the adjustment value with the 10-key and press the PRINT switch, and the entered value will be saved and a copy will be made. When the clear key is pressed, the entered value will be saved and the simulation will be terminated. (When the setup value is increased by 1, shift is increased by 0.1mm.)</p> <table><tr><th>Adjustment mode</th><th>Lamp ON</th></tr><tr><td>Print center offset (Main cassette paper feed)</td><td>AE, main cassette lamp</td></tr><tr><td>☆ Print center offset (2nd cassette paper feed)</td><td>AE, 2nd cassette lamp</td></tr><tr><td>Print center offset (Manual paper feed)</td><td>AE, manual paper feed lamp</td></tr><tr><td>OC/document center offset</td><td>AE, TEXT lamp</td></tr><tr><td>☆ SPF/RSPF (front) document center offset</td><td>AE, TEXT, PHOTO lamp</td></tr></table> <p>☆ : Supported only for installing models, and skipped for not-installing models.</p> <p>* When the setup value is too great, outside of the shading area may be read, and black streaks may be produced on the edges. When the adjustment value is increased, the image is shifted to the left. When the adjustment value is decreased, the image is shifted to the right.</p> | Adjustment mode | Lamp ON | Print center offset (Main cassette paper feed) | AE, main cassette lamp | ☆ Print center offset (2nd cassette paper feed) | AE, 2nd cassette lamp | Print center offset (Manual paper feed) | AE, manual paper feed lamp | OC/document center offset | AE, TEXT lamp | ☆ SPF/RSPF (front) document center offset | AE, TEXT, PHOTO lamp | | |
| Adjustment mode | Lamp ON | | | | | | | | | | | | | | | |
| Print center offset (Main cassette paper feed) | AE, main cassette lamp | | | | | | | | | | | | | | | |
| ☆ Print center offset (2nd cassette paper feed) | AE, 2nd cassette lamp | | | | | | | | | | | | | | | |
| Print center offset (Manual paper feed) | AE, manual paper feed lamp | | | | | | | | | | | | | | | |
| OC/document center offset | AE, TEXT lamp | | | | | | | | | | | | | | | |
| ☆ SPF/RSPF (front) document center offset | AE, TEXT, PHOTO lamp | | | | | | | | | | | | | | | |
| 51 | 02 | <p>Resist quantity adjustment Used to adjust the contact pressure of paper against the machine resist roller and the RSPF resist roller. (Operating procedure) When this simulation is executed, the current setup value is displayed. Enter the adjustment value with the 10-key and press the PRINT switch, the entered set value will be saved and a copy will be made. When the clear key is pressed, the entered value will be saved and the machine will exit from the simulation mode.</p> <table><tr><th>Adjustment mode</th><th>Lamp ON</th></tr><tr><td>Main cassette paper feed</td><td>AE, main cassette lamp</td></tr><tr><td>☆ 2nd cassette paper feed</td><td>AE, 2nd cassette lamp</td></tr><tr><td>Manual paper feed</td><td>AE, manual paper feed lamp</td></tr><tr><td>☆ RSPF document feed (front)</td><td>AE, TEXT, PHOTO lamp</td></tr><tr><td>☆ RSPF document feed (back)</td><td>AE, TEXT lamp</td></tr><tr><td>☆ duplex back</td><td>TEXT, PHOTO lamp</td></tr></table> <p>☆ : Supported only for installing models, and skipped for not-installing models.</p> | Adjustment mode | Lamp ON | Main cassette paper feed | AE, main cassette lamp | ☆ 2nd cassette paper feed | AE, 2nd cassette lamp | Manual paper feed | AE, manual paper feed lamp | ☆ RSPF document feed (front) | AE, TEXT, PHOTO lamp | ☆ RSPF document feed (back) | AE, TEXT lamp | ☆ duplex back | TEXT, PHOTO lamp |
| Adjustment mode | Lamp ON | | | | | | | | | | | | | | | |
| Main cassette paper feed | AE, main cassette lamp | | | | | | | | | | | | | | | |
| ☆ 2nd cassette paper feed | AE, 2nd cassette lamp | | | | | | | | | | | | | | | |
| Manual paper feed | AE, manual paper feed lamp | | | | | | | | | | | | | | | |
| ☆ RSPF document feed (front) | AE, TEXT, PHOTO lamp | | | | | | | | | | | | | | | |
| ☆ RSPF document feed (back) | AE, TEXT lamp | | | | | | | | | | | | | | | |
| ☆ duplex back | TEXT, PHOTO lamp | | | | | | | | | | | | | | | |
| 53 | 08 | <p>SPF scan position automatic adjustment Place a black chart so that it covers the SPF scan glass and the OC glass, and execute the simulation with the OC cover open, the mirror unit scans from the home position to the SPF scan position to identify the SPF glass cover edge position by the difference in the CCD output levels of the SPF glass cover edge and the OC side document glass. Default is 50. Adjustment range is 0 – 99. Adjustment increment: 1 = about 0.127mm If this adjustment is performed properly, the adjustment value is displayed. If it is abnormal, the jam lamp lights up. If the adjustment is not made properly, “- -” is displayed.</p> | | | | | | | | | | | | | | |
| 61 | 03 | <p>Polygon motor check (HSYNC output check) (Operation/Procedure) When the START key is pressed, HSYNC is performed and the polygon motor is rotated for 30 sec. At that time, the Zoom lamp is lit for 100msec for every 3 times that the HSYNC is detected.</p> | | | | | | | | | | | | | | |
| 63 | 01 | <p>Shading check Used to display the detection level of the white board for shading. (Operating procedure) When the PRINT switch is pressed, the mirror base unit moves to the white board for shading to light the copy lamp. Under this state, the level of one pixel at the CCD center which is not corrected for 10sec in 1 sec, and the result is displayed on the value display section.</p> | | | | | | | | | | | | | | |
| 64 | 01 | <p>Self print Print of one page is made regardless of the status of the optical system. (Operating procedure) When this simulation is executed, warm-up is performed and the ready lamp is lighted. Enter the code number with the 10-key, and select the cassette with the cassette select key and press the PRINT switch, and paper feed operation will be made from the selected cassette and printing of the selected pattern will be made. Printing is in 1by2 mode, or grid pattern.</p> <table><tr><th>Code number</th><th>Pattern</th></tr><tr><td>0</td><td>1by2</td></tr><tr><td>1</td><td>Grid pattern</td></tr></table> <p>* 2 – 99: print in 1by2.</p> | Code number | Pattern | 0 | 1by2 | 1 | Grid pattern | | | | | | | | |
| Code number | Pattern | | | | | | | | | | | | | | | |
| 0 | 1by2 | | | | | | | | | | | | | | | |
| 1 | Grid pattern | | | | | | | | | | | | | | | |

4. Trouble codes

A. Trouble codes list

| Main code | Sub code | Trouble content | Detail of trouble |
|-----------|----------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E7 | 01 | Duplex model memory setup error, memory not-detected error | The memory is not set properly or the memory capacity is not set to the duplex setup (6M). Cancel method: Set SIM 26-39 code number to 2. |
| | 02 | HSYNC not detected. | LSU (laser diode, reception element, APC circuit) trouble LSU drive circuit (ASIC) trouble |
| | 10 | CCD black level trouble | CCD drive circuit (CCD PWB, ASIC, harness) trouble |
| | 11 | CCD white level trouble | CCD drive circuit (CCD PWB, ASIC harness) trouble Copy lamp lighting trouble (Copy lamp, inverter PWB) |
| | 12 | Shading trouble (White correction) | Dirt on white plate for scanning white level |
| | 16 | Laser output trouble | LSU (laser diode, reception element, APC circuit) trouble LSU drive circuit (ASIC) trouble |
| F5 | 02 | Copy lamp disconnection trouble | Copy lamp or copy lamp drive circuit (inverter PWB) trouble Copy lamp disconnection |
| H2 | 00 | Thermistor open detection | The fusing thermistor is open. |
| H3 | 00 | Heat roller abnormally high temperature | The fusing temperature rises above 240°C. |
| H4 | 00 | Heat roller abnormally low temperature | The fusing temperature does not reach 185°C within 27 sec of turning on the power, or the fusing temperature keeps at 140°C. |
| L1 | 00 | Feeding is not completed within the specified time after starting feeding. (The scan head locking switch is locked) | The white area and the black marking on the shading plate are used to obtain the difference in the CCD level values for judgment of lock. When the difference in the levels of which and black is small, it is judged that the black mark could not be scanned by lock and the trouble code "L1" is displayed. |
| L3 | 00 | Return is not completed within the specified time. | When the mirror base is returned for the specified time (6 sec) in mirror initializing after turning on the power, the mirror home position sensor (MHPS) does not turn ON. Or when the mirror base is returned for the specified time (about 6 sec) after start of copy return, the mirror home position sensor (MHPS) does not turn ON. |
| L4 | 01 | Main motor lock | When the main motor encoder pulse is not detected for 100 msec. |
| L6 | 10 | Polygon motor lock | The lock signal (specified rpm signal) does not return within a certain time (about 20 sec) from starting the polygon motor rotation |
| U2 | 01 | Counter sum check error | When the counter check sum value stored in the EEPROM is abnormal. |
| | 04 | EEPROM serial communication error | When a communication trouble occurs with the EEPROM. |

[11] USER PROGRAMS

The conditions of factory setting can be changed according to the use conditions.




1. Functions that can be set with user programs

| Function | Contents | Factory setting |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Auto clear | <ul style="list-style-type: none"> When a certain time is passed after completion of copying, this function returns to the initial state automatically. The time to reach the initial state can be set in the range of 30 sec to 120 sec by the unit of 30 sec. This function can be disabled. | 60 sec |
| Pre-heat | <ul style="list-style-type: none"> When the copier is left unused with the power ON, the power consumption is automatically reduced to about 40Wh/H (* Note). The time to start this function can be set in the range of 30 sec to 90 sec by the unit of 30 sec. This function cannot be disabled. When this function is operated, the pre-heat lamp on the operation panel lights up. To return to the initial state, press any key on the operation panel. (When the COPY button is pressed, a copy is made after returning to the initial state.) | 30 sec |
| Auto shut off passing time | <ul style="list-style-type: none"> When the copier is left unused with the power ON, the power consumption is automatically reduced to about 18Wh/H (* Note). The time to start this function can be set in the range of 2 min to 120 min. When this function is operated, all the lamps except for the pre-heat lamp on the operation panel turn off. To return to the initial state, press the COPY button. | 5 min |
| Stream feeding | Only models with SPF | Set |
| Auto shut off setting | Used to set or cancel this function. | Set |
| Auto/Manual mode resolution setup | Used to set the resolution in the auto/manual mode. The speed priority (300dpi) and the resolution priority (600dpi) are effective for fine text and ultra fine text. | 300 dpi |

* Note: The power consumption values in pre-heat and auto shut off may be varied depending on the use conditions.

2. Change the setting

Example: Changing the time to operate the auto clear function
(Change from 60 sec to 90 sec)

- Press the right and the left exposure adjustment keys simultaneously to start setting.
 - Keep pressing the keys for 5 sec.
 - Display lamps (, , ) blink simultaneously and " -- " is displayed on the copy quantity display.
- Select the function code with the 10-digit key (copy quantity set key).
 - The number of the selected function blinks on the digit of 10 on the copy quantity display.
 - For auto clear, select " 1. "
 - For setting, refer to the following function codes.

| Function name | Function code |
|-----------------------------------|---------------|
| Auto clear | 1 |
| Pre-heat | 2 |
| Auto shut off passing time | 3 |
| Stream feeding | 4* |
| Auto shut off setting | 5 |
| Auto/Manual mode resolution setup | 6 |

[Cancel] If a wrong code is entered, press the clear key and enter the correct function code.

* SPF only

- Press the COPY button.
 - The number blinking on the digit of 10 of the copy quantity display is lighted.
 - The number of the current set code blinks on the digit of 1.
- Select the setting code with 1-digit key (copy quantity set key).
 - To set to 90 sec, select " 4. "
 - For setting, refer to the following set codes.

| Function name | Set code |
|-----------------------------------|--------------|
| Auto clear | 0 (OFF) |
| | 1 (10 sec) |
| | 2 (30 sec) |
| | *3 (60 sec) |
| | 4 (90 sec) |
| Pre-heat | 5 (120 sec) |
| | *0 (30 sec) |
| | 1 (60 sec) |
| | 2 (90 sec) |
| | |
| Auto shut off | 0 (2 min) |
| | *1 (5 min) |
| | 2 (15 min) |
| | 3 (30 min) |
| | 4 (60 min) |
| | 5 (120 min) |
| Stream feeding | 0 (Cancel) |
| | *1 (Setting) |
| Auto shut off setting | 0 (Cancel) |
| | *1 (Setting) |
| Auto/Manual mode resolution setup | *0 (300 dpi) |
| | 1 (600 dpi) |






* Factory setting

- The number blinking on the digit of 1 of the copy quantity display is lit up. This means the setting is completed.

[Cancel] When a wrong number of the function code is set, press the clear key and perform the procedure again from step 2.

- Press the COPY button.
 - The number blinking on the digit of 1 of the copy quantity display is lit up. This means the setting is completed.

Note: To set another function, press the clear key after completion of this operation and perform the procedure from step 2.

- Press either one of the exposure adjustment keys ( or ) to complete the setting.
 - Display lamps (, , ) go off and the copy quantity display returns to the normal state.

3. Density level adjustment

A. AE level adjustment (OC mode)

[Input procedure]

When the density select key is pressed and held for 5 sec after turning on the [PHOTO] mode lamp, the [AUTO] mode lamp blinks and the current setup of the density level is displayed.

[Adjustment]

The adjustment is made in 5 steps by pressing the density adjustment key.

[Terminating procedure]

When the density select key is pressed, the mode display is changed from blinking to lighting, and the AE level setup is completed.

- In the AE level adjustment mode, all the keys except for the [Density select] key, the [Density adjustment] keys ([>] key and [<] key) are disabled.
- In the AE level adjustment mode, the ready lamp and the online lamp are turned off.
- The auto mode level adjustment is applied only for the auto mode.
- When the machine enters the exposure adjustment mode of OC once, the adjustment mode is not changed though a document is set on the SPF until the setup is completed.

B. AE level adjustment (SPF mode)

[Input procedure]

With the SPF mode lamp ON, when the density select key is pressed and held for 5 sec after turning on the [PHOTO] mode lamp, the [AUTO] mode lamp blinks and the current setup of the density level is displayed.

[Adjustment]

The adjustment is made in 5 steps by pressing the density adjustment key.

[Terminating procedure]

When the mode select key is pressed, the mode display is changed from blinking to lighting, and the AE level setup is completed.

- During the AE level adjustment mode, all the keys except for the [Density select] key, the [Density adjustment] keys ([>] key and [<] key) are disabled.
- During the AE level adjustment mode, the ready lamp and the online lamp are turned off.
- The auto mode level adjustment is applied only for the auto mode.
- When the machine enters the SPF exposure adjustment mode once, the adjustment mode is not changed though a document is removed from the SPF until the setup is completed.
- This function is not available for the OC model.

4. Toner save mode setup and cancel

[Input procedure]

When the density select key is pressed and held for 5 sec after turning on the [TEXT] mode lamp, the [PHOTO] mode lamp blinks and the current setup of the density level is displayed.

[Setup/Cancel]

When the density adjustment key [<] is pressed, Level 1 is lighted and the toner save mode is set.

When the density adjustment key [>] is pressed, Level 5 is lighted and the toner save mode is canceled.

[Terminating procedure]

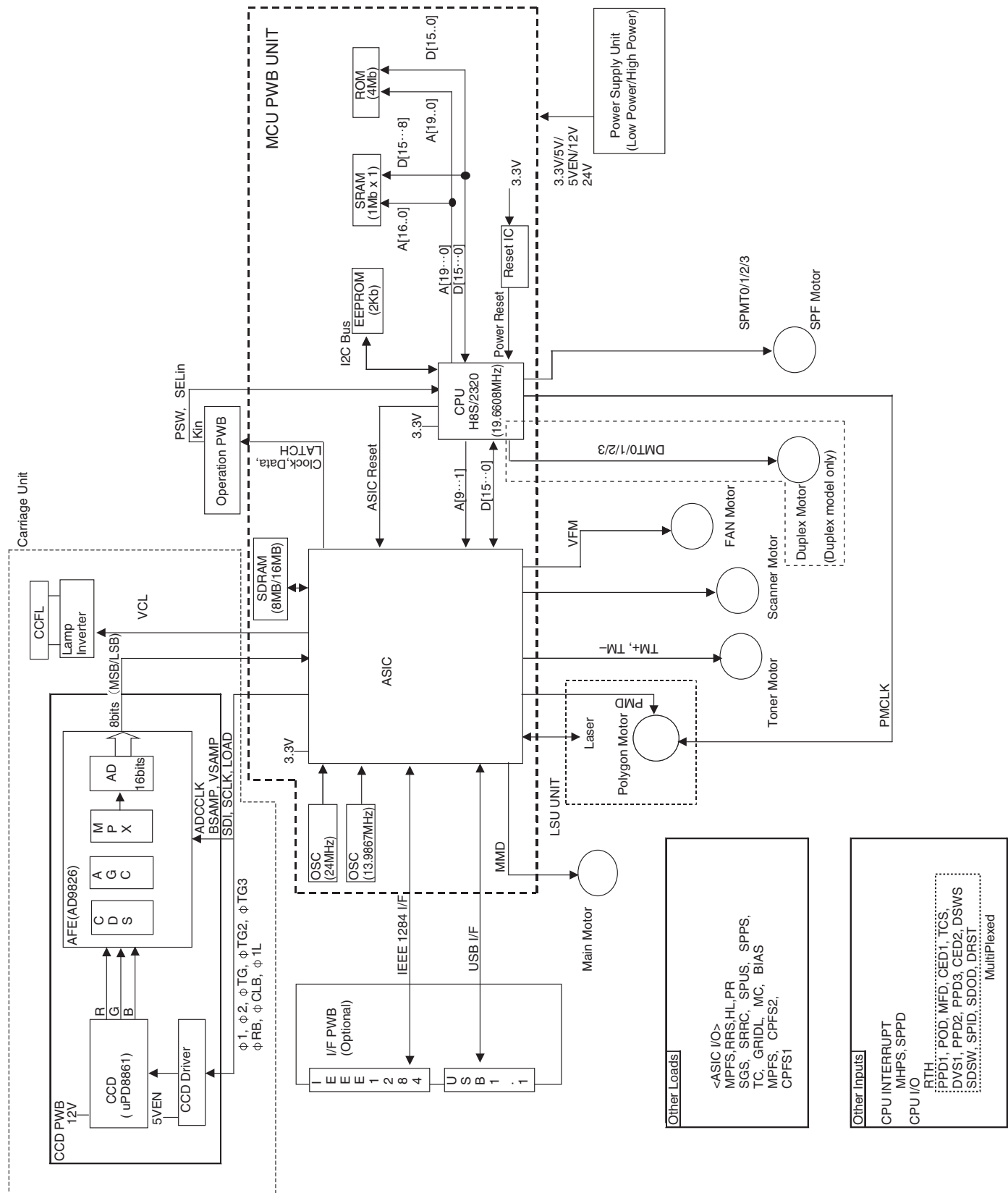
When the density select key is pressed, the mode display is changed from blinking to lighting, and the setup is completed.

- During the toner save mode setup, all the keys except for the [Density select] key, the [Density adjustment] keys ([>] key and [<] key) are disabled.
- During the toner save mode setup, the ready lamp and the online lamp are turned off.
- The toner save mode is applied in the auto mode and the manual mode.

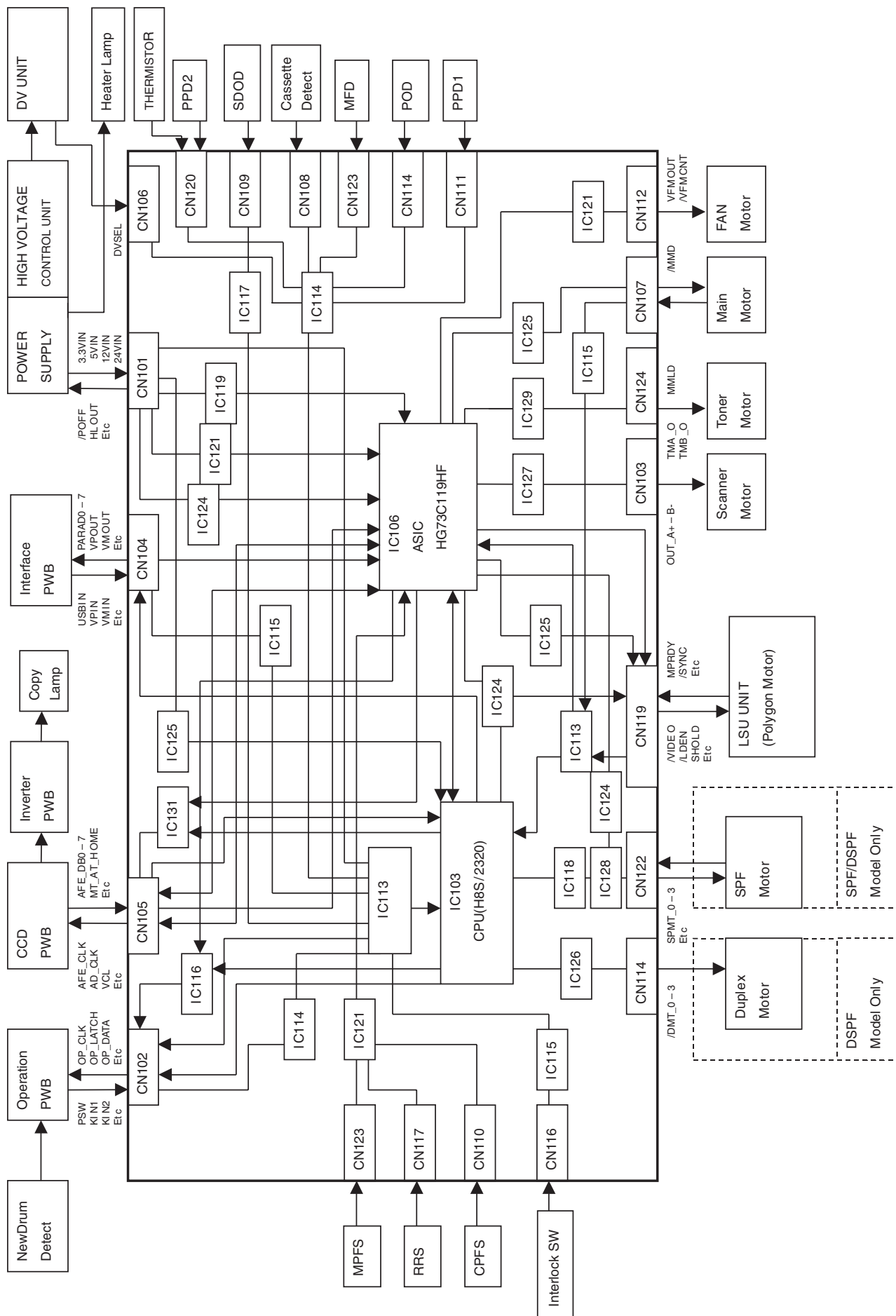
[12] ELECTRICAL SECTION

1. Block diagram

A. Overall block diagram



B. MCU PWB unit



2. Circuit descriptions

A. Main PWB (MCU)

(1) General

The MCU PWB is composed of:

- CPU peripheral sections which perform mechanical sequence control and function job management
- Image process ASIC which performs image process, CCD control, LSU control, and print control
- Motor control circuit
- Mechanical load, sensor I/O circuit

It controls the processes for copying, the transport loads, fusing, the optical system, the operation panel, and the option PWB.

(2) CPU signal table (HD6412320F)

| PIN No. | Signal code | Input/Output | Operating |
|---------|-------------|--------------------------|----------------------------|
| 1 | /CS1 | Output | SRAM chip select |
| 2 | /CS0 | Output | Flash ROM chip select |
| 3 | GND | | DGND |
| 4 | GND | | DGND |
| 5 | Vcc | | CPU3.3V |
| 6 | A0 | Output | Address bus |
| 7 | A1 | Output | Address bus |
| 8 | A2 | Output | Address bus |
| 9 | A3 | Output | Address bus |
| 10 | GND | | DGND |
| 11 | A4 | Output | Address bus |
| 12 | A5 | Output | Address bus |
| 13 | A6 | Output | Address bus |
| 14 | A7 | Output | Address bus |
| 15 | A8 | Output | Address bus |
| 16 | A9 | Output | Address bus |
| 17 | A10 | Output | Address bus |
| 18 | A11 | Output | Address bus |
| 19 | GND | | DGND |
| 20 | A12 | Output | Address bus |
| 21 | A13 | Output | Address bus |
| 22 | A14 | Output | Address bus |
| 23 | A15 | Output | Address bus |
| 24 | A16 | Output | Address bus |
| 25 | A17 | Output | Address bus |
| 26 | A18 | Output | Address bus |
| 27 | A19 | Output | Address bus |
| 28 | GND | | DGND |
| 29 | A20 | | Pull-Up |
| 30 | PSW | Interruption level input | Print SW |
| 31 | SPPD | Interruption level input | SPF paper sensor |
| 32 | CCD_TG | Interruption level input | CCD horizontal sync signal |
| 33 | Mt_at_home | Interruption level input | Mirror Home Position |
| 34 | /CPUSYNC | Interruption level input | Horizontal sync (ASIC) |
| 35 | GND | | DGND |
| 36 | GND | | DGND |
| 37 | FW | Interruption level input | Zero cross signal |
| 38 | ARB_INT | Interruption level input | ASIC interruption |
| 39 | Vcc | | CPU3.3V |
| 40 | D0 | Data I/O | Data bus |
| 41 | D1 | Data I/O | Data bus |
| 42 | D2 | Data I/O | Data bus |
| 43 | D3 | Data I/O | Data bus |
| 44 | GND | | DGND |

| PIN No. | Signal code | Input/Output | Operating |
|---------|-------------|--------------|-----------------------------|
| 45 | D4 | Data I/O | Data bus |
| 46 | D5 | Data I/O | Data bus |
| 47 | D6 | Data I/O | Data bus |
| 48 | D7 | Data I/O | Data bus |
| 49 | D8 | Data I/O | Data bus |
| 50 | D9 | Data I/O | Data bus |
| 51 | D10 | Data I/O | Data bus |
| 52 | D11 | Data I/O | Data bus |
| 53 | GND | | DGND |
| 54 | D12 | Data I/O | Data bus |
| 55 | D13 | Data I/O | Data bus |
| 56 | D14 | Data I/O | Data bus |
| 57 | D15 | Data I/O | Data bus |
| 58 | Vcc | | CPU3.3V |
| 59 | ONL | Output | Online LED control |
| 60 | TxD1 | Output | For debug |
| 61 | D_CONT | Output | USB Pull-Up control |
| 62 | BEO | Output | OPE LED control |
| 63 | RESETOUT1 | Output | ASIC Reset signal |
| 64 | CL_Reset | Output | Copy lamp control |
| 65 | GND | | DGND |
| 66 | /DREQ0 | | Pull-Up |
| 67 | GND | | DGND |
| 68 | GND | | DGND |
| 69 | RY/BY | Input | Flash Busy signal |
| 70 | KIN1 | Input | HC151 selector detection |
| 71 | KIN2 | Input | HC151 selector detection |
| 72 | TMCLK | Output | Toner motor lock |
| 73 | TMEN | Output | Toner motor enable |
| 74 | POFF | Output | Shut off control |
| 75 | PMCLK | Output | Polygon clock |
| 76 | DMT0 | Output | Duplex Motor signal |
| 77 | DMT1 | Output | Duplex Motor signal |
| 78 | DMT2 | Output | Duplex Motor signal |
| 79 | DMT3 | Output | Duplex Motor signal |
| 80 | WDTOVF | Output | NC Pull-Up |
| 81 | /RES | Input | Reset |
| 82 | NMI | Output | NC Pull-Up |
| 83 | STBY | Output | NC Pull-Up |
| 84 | Vcc | | CPU3.3V |
| 85 | XTAL | Input | Clock |
| 86 | EXTAL | Output | Clock |
| 87 | GND | | DGND |
| 88 | CPUCLK | Output | NC |
| 89 | Vcc | | CPU3.3V |
| 90 | Reset OUT | | NC |
| 91 | /RD | Output | Read signal |
| 92 | /HWR | Output | Write signal (High address) |
| 93 | /LWR | Output | Write signal (Low address) |
| 94 | SELIN3 | Output | HC151 select signal |
| 95 | SELIN2 | Output | HC151 select signal |
| 96 | SELIN1 | Output | HC151 select signal |
| 97 | FAXSTS | | NC |
| 98 | FAXCMD | | NC |
| 99 | GND | | DGND |
| 100 | GND | | DGND |
| 101 | SCL | Output | EEPROM clock |
| 102 | DSDA | Data I/O | EEPROM Data bus |
| 103 | AVcc | | CPU3.3V |
| 104 | Vref | | CPU3.3V |
| 105 | RTH | Analog input | Fusing thermistor |
| 106 | | Analog input | NC Pull-Up |
| 107 | SIN1 | Input | HC151 select detection |
| 108 | SIN2 | Input | HC151 select detection |
| 109 | SIN3 | Input | HC151 select detection |

| PIN No. | Signal code | Input/ Output | Operating |
|---------|--------------|---------------|---------------------------------|
| 110 | USBIN | Input | IF PWB detection signal |
| 111 | | Input | NC |
| 112 | | Input | NC |
| 113 | Avss | | DGND |
| 114 | GND | | DGND |
| 115 | /SCANSP | Output | Scan STOP signal |
| 116 | /SCANST | Output | Scan START signal |
| 117 | /TRANSST | Output | ASIC transfer signal |
| 118 | /PRINTST | Output | Print Start signal |
| 119 | SPMT3 | Output | SPF motor signal |
| 120 | SPMT2/MIRCNT | Output/ Input | SPF motor signal/mirror counter |
| 121 | SPMT1 | Output | SPF motor signal |
| 122 | SPMT0 | Output | SPF motor signal |
| 123 | GND | | DGND |
| 124 | GND | | DGND |
| 125 | Vcc | | CPU3.3V |
| 126 | PSL | Output | Power save LED control |
| 127 | | | NC |
| 128 | /CS2 | Output | ASIC chip select |

(3) Image process ASIC (HG73C119HF)

a. General

The ASIC is composed of the three major blocks: the image process section, the print control section, and the I/F section.

Image process section:

With image data from the CCD PWB in the operation mode determined by the register setup, shading, AE process, input γ correction, area separation, filter process, resolution conversion, zoom process, output γ correction, binary conversion (error diffusion, dither method, simple binary conversion) are performed.

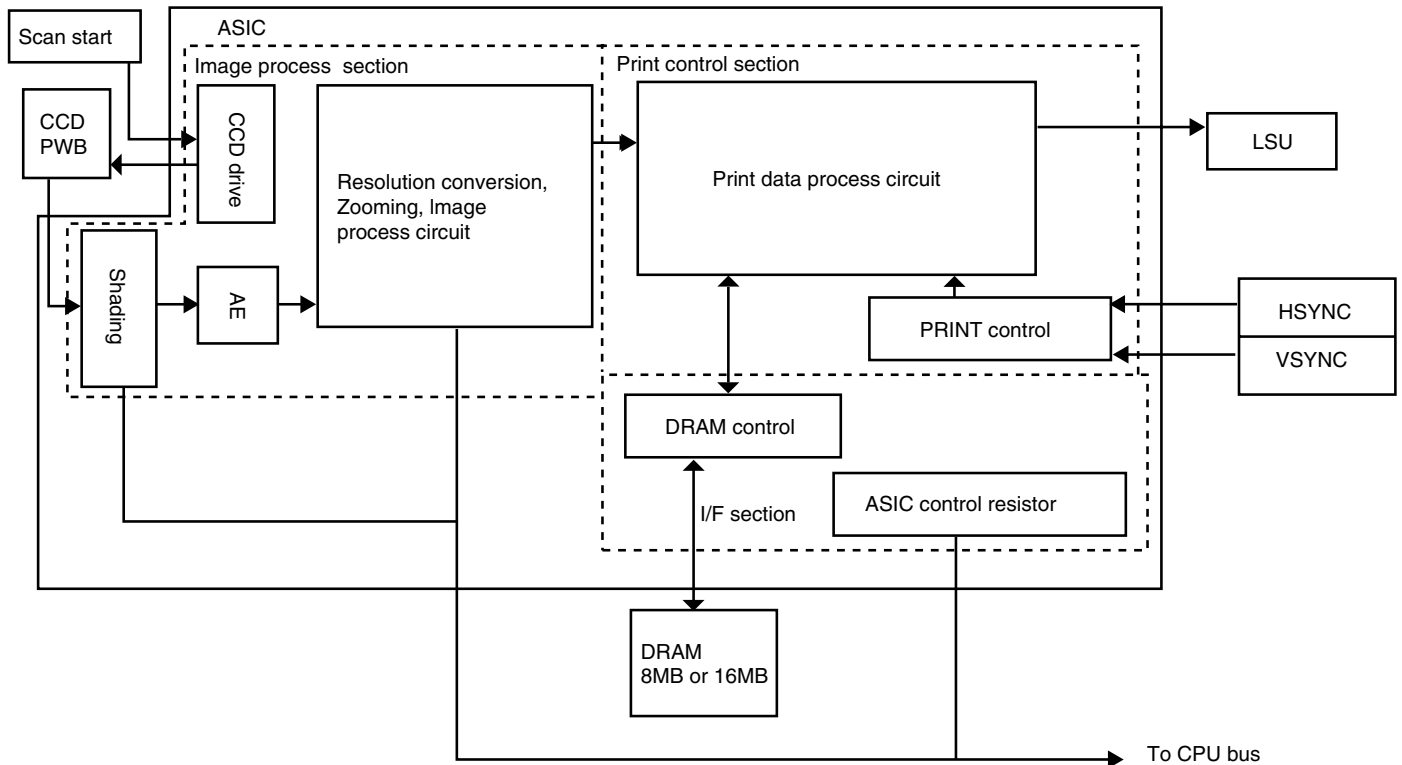
Print control section:

When copying, the image-processed data are outputted to the LSU according to the LSU writing timing. When scanning, the image data are made into 8bit width and outputted to the I/F section (USB).

I/F section:

Controls the DRAM which is the image data buffer, and processes data send/receive between the USB I/F and the IEEE1284 I/F.

The ASIC is controlled by writing the operation mode and the necessary setup values of the operation mode into the ASIC control register before starting each operation. (For ASIC Pin configuration, refer to the table at the end of this document.)



b. ASIC (Signal table)

| PIN No. | Signal Name | IN/OUT | Connected to | Description |
|---------|-------------------|--------|--------------|----------------------------------------------|
| 1 | cpu_ad7 | IN | CPU | CPU address bus |
| 2 | cpu_ad6 | IN | CPU | CPU address bus |
| 3 | cpu_ad5 | IN | CPU | CPU address bus |
| 4 | cpu_ad4 | IN | CPU | CPU address bus |
| 5 | VCC(CORE/DC) 3.3V | Power | | |
| 6 | cpu_ad3 | IN | CPU | CPU address bus |
| 7 | cpu_ad2 | IN | CPU | CPU address bus |
| 8 | GND(CORE/DC) | Power | | |
| 9 | cpu_ad1 | IN | CPU | CPU address bus |
| 10 | sgs | OUT | Tr array IC | SPF/RSPF gate solenoid control signal "H":ON |

| PIN No. | Signal Name | IN/OUT | Connected to | Description |
|---------|-------------|--------|--------------|------------------------------------------------------------|
| 11 | srrc | OUT | Tr array IC | SPF/RSPF resist roller clutch control signal "H":ON |
| 12 | spus | OUT | Tr array IC | SPF/RSPF document feed solenoid control signal "H":ON |
| 13 | spfs | OUT | Tr array IC | SPF/RSPF document transport solenoid control signal "H":ON |
| 14 | mrps1 | OUT | Tr array IC | SPF/RSPF motor current control signal |
| 15 | mrps2 | OUT | Tr array IC | SPF/RSPF motor current control signal |

| PIN No. | Signal Name | IN/OUT | Connected to | Description |
|---------|-------------------|--------|--------------|--------------------------------------------------------------------------------|
| 16 | ope_latch | OUT | Tr array IC | Operation circuit latch signal. Data take-in at "L" |
| 17 | op_data | OUT | Tr array IC | Operation circuit data signal |
| 18 | VCC(AC) 3.3V | Power | | |
| 19 | op_clk | OUT | Tr array IC | Operation circuit clock signal |
| 20 | vfmcnt | OUT | Tr array IC | Ventilation fan rotation speed control signal. "H": High speed, "L": Low speed |
| 21 | GND(AC) | Power | | |
| 22 | vfm | OUT | Tr array IC | Ventilation fan control signal. "H": Fan ON |
| 23 | tc | OUT | Tr array IC | Transfer charger control signal. "H":ON |
| 24 | gridl | OUT | Tr array IC | Main charger grid control signal. "H": L output |
| 25 | mc | OUT | Tr array IC | Main charger control signal. "H": ON |
| 26 | mrps3 | OUT | Tr array IC | SPF/RSPF motor current control signal |
| 27 | mm_y3 | OUT | Tr array IC | Carriage motor current control signal |
| 28 | bias | OUT | Tr array IC | DV bias control signal. "H":ON |
| 29 | lden | OUT | Tr array IC | Laser circuit control signal. "H": Laser circuit ON |
| 30 | pmd | OUT | Tr array IC | Polygon motor control signal. "H": Polygon motor ON |
| 31 | GND(CORE/DC) | Power | | |
| 32 | mmd | OUT | Tr array IC | Main motor control signal. "H": Main motor ON |
| 33 | GND(CORE/DC) | Power | | |
| 34 | VCC(CORE/DC) 3.3V | Power | | |
| 35 | mpfs | OUT | Tr array IC | Manual feed solenoid control signal. "H": ON |
| 36 | cpfs2 | OUT | Tr array IC | Second cassette paper feed solenoid control signal. "H":ON |
| 37 | cpfs1 | OUT | Tr array IC | Cassette paper feed solenoid control signal. "H":ON |
| 38 | poffr | | | (Not used) |
| 39 | rrs | OUT | Tr array IC | Resist roller solenoid control signal. "H":ON |
| 40 | pr | OUT | Tr array IC | Power relay control signal. "H":ON |
| 41 | hl | OUT | Tr array IC | Heater lamp control signal. "H":ON |
| 42 | TMON | OUT | Tr array IC | (Not used) |
| 43 | TM_ | OUT | Buffer IC | Toner motor control signal |
| 44 | VCC(AC) 3.3V | Power | | |
| 45 | TM | OUT | Buffer IC | Toner motor control signal |
| 46 | miron | OUT | Buffer IC | SPF scanner select signal |
| 47 | GND(AC) | Power | | |
| 48 | spfon | OUT | Buffer IC | SPF ON signal |

| PIN No. | Signal Name | IN/OUT | Connected to | Description |
|---------|---------------------|--------|---------------------|----------------------------------------------|
| 49 | mircnt | OUT | Buffer IC | SPF scanner select signal |
| 50 | GND(AC) | Power | | |
| 51 | pcl_s_print | | | (Not used) |
| 52 | fax_s_print | | | (Not used) |
| 53 | es_s_print | | | (Not used) |
| 54 | prareaen | | | (Not used) |
| 55 | d_s_ATDI_B | | | (Not used) |
| 56 | GND(CORE/DC) | Power | | |
| 57 | VCC(CORE/ GND) 3.3V | | | |
| 58 | pfclko | | | (Not used) |
| 59 | RESET | IN | | ASIC reset signal |
| 60 | GND(CORE/DC) | Power | | |
| 61 | ATRST | IN | | (Not used) |
| 62 | ATCK | | | (Not used) |
| 63 | ATMS | | | (Not used) |
| 64 | VCC(AC) 3.3V | Power | | |
| 65 | ie1284_stb | IN | I/F board connector | /STB signal (IEEE1284 communication port) |
| 66 | ie1284_autofd | IN | I/F board connector | /AUTOFD signal (IEEE1284 communication port) |
| 67 | ie1284_slctin | IN | I/F board connector | /SLCTIN signal (IEEE1284 communication port) |
| 68 | ie1284_init | IN | I/F board connector | /INIT signal (IEEE1284 communication port) |
| 69 | VCC(CORE/DC) 3.3V | Power | | |
| 70 | ie1284_slct | OUT | I/F board connector | SLCT signal (IEEE1284 communication port) |
| 71 | ie1284_pe | OUT | I/F board connector | PE signal (IEEE1284 communication port) |
| 72 | GND(CORE/DC) | Power | | |
| 73 | ie1284_busy | OUT | I/F board connector | BUSY signal (IEEE1284 communication port) |
| 74 | ie1284_ack | OUT | I/F board connector | /ACK signal (IEEE1284 communication port) |
| 75 | ie1284_fault | OUT | I/F board connector | /FAULT signal (IEEE1284 communication port) |
| 76 | ie1284_rev | OUT | I/F board connector | /REV signal (IEEE1284 communication port) |
| 77 | ie1284_parad7 | IN/OUT | I/F board connector | DATA bus (IEEE1284 communication port) |
| 78 | ie1284_parad6 | IN/OUT | I/F board connector | DATA bus (IEEE1284 communication port) |
| 79 | ie1284_parad5 | IN/OUT | I/F board connector | DATA bus (IEEE1284 communication port) |
| 80 | ie1284_parad4 | IN/OUT | I/F board connector | DATA bus (IEEE1284 communication port) |
| 81 | ie1284_parad3 | IN/OUT | I/F board connector | DATA bus (IEEE1284 communication port) |
| 82 | VCC(AC) 3.3V | | | |
| 83 | ie1284_parad2 | IN/OUT | I/F board connector | DATA bus (IEEE1284 communication port) |
| 84 | ie1284_parad1 | IN/OUT | I/F board connector | DATA bus (IEEE1284 communication port) |
| 85 | GND(AC) | Power | | |

| PIN No. | Signal Name | IN/OUT | Connected to | Description |
|---------|-------------------|--------|---------------------|--------------------------------------------|
| 86 | ie1284_parad0 | IN/OUT | I/F board connector | DATA bus (IEEE1284 communication port) |
| 87 | suspend | OUT | I/F board connector | SUSPEND signal (USB communication port) |
| 88 | vmin | IN | I/F board connector | VMIN signal (USB communication port) |
| 89 | vpin | IN | I/F board connector | VPIN signal (USB communication port) |
| 90 | rcv | IN | I/F board connector | RCV signal (USB communication port) |
| 91 | oen | OUT | I/F board connector | OEN signal (USB communication port) |
| 92 | vmout | OUT | I/F board connector | VMOUT signal (USB communication port) |
| 93 | vpout | OUT | I/F board connector | VPOUT signal (USB communication port) |
| 94 | tm2_15m | | | (Not used) |
| 95 | VCC(PLL) 3.3V | Power | | |
| 96 | GND(PLL) | Power | | |
| 97 | VCC(PLL) 3.3V | Power | | |
| 98 | GND(PLL) | Power | | |
| 99 | pfclk | IN | | Clock |
| 100 | VCC(CORE/DC) 3.3V | Power | | |
| 101 | GND(CORE/DC) | Power | | |
| 102 | ram_data0 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 103 | ram_data1 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 104 | ram_data2 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 105 | GND(AC) | Power | | |
| 106 | ram_data3 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 107 | ram_data4 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 108 | VCC(AC) 3.3V | Power | | |
| 109 | ram_data5 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 110 | ram_data6 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 111 | GND(CORE/DC) | Power | | |
| 112 | ram_data7 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 113 | ram_data15 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 114 | ram_data14 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 115 | VCC(CORE/DC) 3.3V | Power | | |
| 116 | ram_data13 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 117 | ram_data12 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |

| PIN No. | Signal Name | IN/OUT | Connected to | Description |
|---------|-------------------|--------|--------------|-----------------------------------------------|
| 118 | GND(CORE/DC) | Power | | |
| 119 | ram_data11 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 120 | ram_data10 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 121 | VCC(CORE/DC) 3.3V | | | |
| 122 | ram_data9 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 123 | ram_data8 | IN/OUT | SDRAM | SDRAM (Image process page memory) data bus |
| 124 | GND(AC) | Power | | |
| 125 | ram_clk | OUT | SDRAM | SDRAM (Image process page memory) CLK signal |
| 126 | ram_cke | OUT | SDRAM | SDRAM (Image process page memory) CKE signal |
| 127 | xram_wde | OUT | SDRAM | SDRAM (Image process page memory) WDE signal |
| 128 | VCC(AC) 3.3V | Power | | |
| 129 | GND(CORE/DC) | Power | | |
| 130 | xram_cas | OUT | SDRAM | SDRAM (Image process page memory) CAS signal |
| 131 | xram_ras | OUT | SDRAM | SDRAM (Image process page memory) RAS signal |
| 132 | xram_cs | OUT | | SDRAM (Image process page memory) CS signal |
| 133 | VCC(CORE/DC) 3.3V | Power | | |
| 134 | ram_banks0 | OUT | SDRAM | SDRAM (Image process page memory) BANK signal |
| 135 | ram_banks1 | OUT | SDRAM | SDRAM (Image process page memory) BANK signal |
| 136 | GND(CORE/DC) | Power | | |
| 137 | ram_dqm0 | OUT | SDRAM | SDRAM (Image process page memory) DQM signal |
| 138 | ram_dqm1 | OUT | SDRAM | SDRAM (Image process page memory) DQM signal |
| 139 | ram_mad12 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 140 | VCC(CORE/DC) 3.3V | Power | | |
| 141 | ram_mad11 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 142 | ram_mad9 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 143 | GND(AC) | | | |
| 144 | ram_mad8 | OUT | SDRAM | SDRAM (Image process page memory) address bus |

| PIN No. | Signal Name | IN/OUT | Connected to | Description |
|---------|-------------------|--------|--------------|-----------------------------------------------|
| 145 | ram_mad7 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 146 | VCC(AC) | | | |
| 147 | ram_mad6 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 148 | ram_mad5 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 149 | GND(CORE/DC) | | | |
| 150 | ram_mad4 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 151 | ram_mad10 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 152 | ram_mad0 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 153 | VCC(CORE/DC) | | | |
| 154 | ram_mad1 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 155 | ram_mad2 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 156 | ram_mad3 | OUT | SDRAM | SDRAM (Image process page memory) address bus |
| 157 | d_s_ATDO_B | | | (Not used) |
| 158 | cl | OUT | Logic IC | Copy lamp control signal |
| 159 | VCC(CORE/DC) 3.3V | Power | | |
| 160 | afp_oeb | | | (Not used) |
| 161 | ccd_tg | OUT | CCD PWB | CCD control signal |
| 162 | GND(CORE/DC) | Power | | |
| 163 | afp_vsmp | OUT | CCD PWB | AFE control signal |
| 164 | ccdrs | OUT | CCD PWB | CCD control signal |
| 165 | ccdcp | OUT | CCD PWB | CCD control signal |
| 166 | VCC(AC) 3.3V | Power | | |
| 167 | afp_bsmp | OUT | CCD PWB | AFE control signal |
| 168 | ccd_ph2 | OUT | CCD PWB | CCD control signal |
| 169 | afp_afesdi | OUT | CCD PWB | AFE control signal |
| 170 | GND(AC) | Power | | |
| 171 | ccd_ph1 | OUT | CCD PWB | CCD control signal |
| 172 | VCC(CORE/DC) | | | |
| 173 | afp_adclk | OUT | CCD PWB | AFE control signal |
| 174 | afp_afesen | OUT | CCD PWB | AFE control signal |
| 175 | GND(CORE/DC) | Power | | |
| 176 | afp_afesck | OUT | CCD PWB | AFE control signal |
| 177 | mtr_at_home | IN | CCD PWB | Carriage home position signal |
| 178 | VCC(CORE/DC) | Power | | |
| 179 | afp_data7 | IN | CCD PWB | Image scan data |
| 180 | afp_data6 | IN | CCD PWB | Image scan data |
| 181 | afp_data5 | IN | CCD PWB | Image scan data |
| 182 | GND(CORE/DC) | Power | | |
| 183 | afp_data4 | IN | CCD PWB | Image scan data |
| 184 | afp_data3 | IN | CCD PWB | Image scan data |
| 185 | VCC(AC) 3.3V | Power | | |
| 186 | afp_data2 | IN | CCD PWB | Image scan data |
| 187 | afp_data1 | IN | CCD PWB | Image scan data |
| 188 | GND(AC) | Power | | |

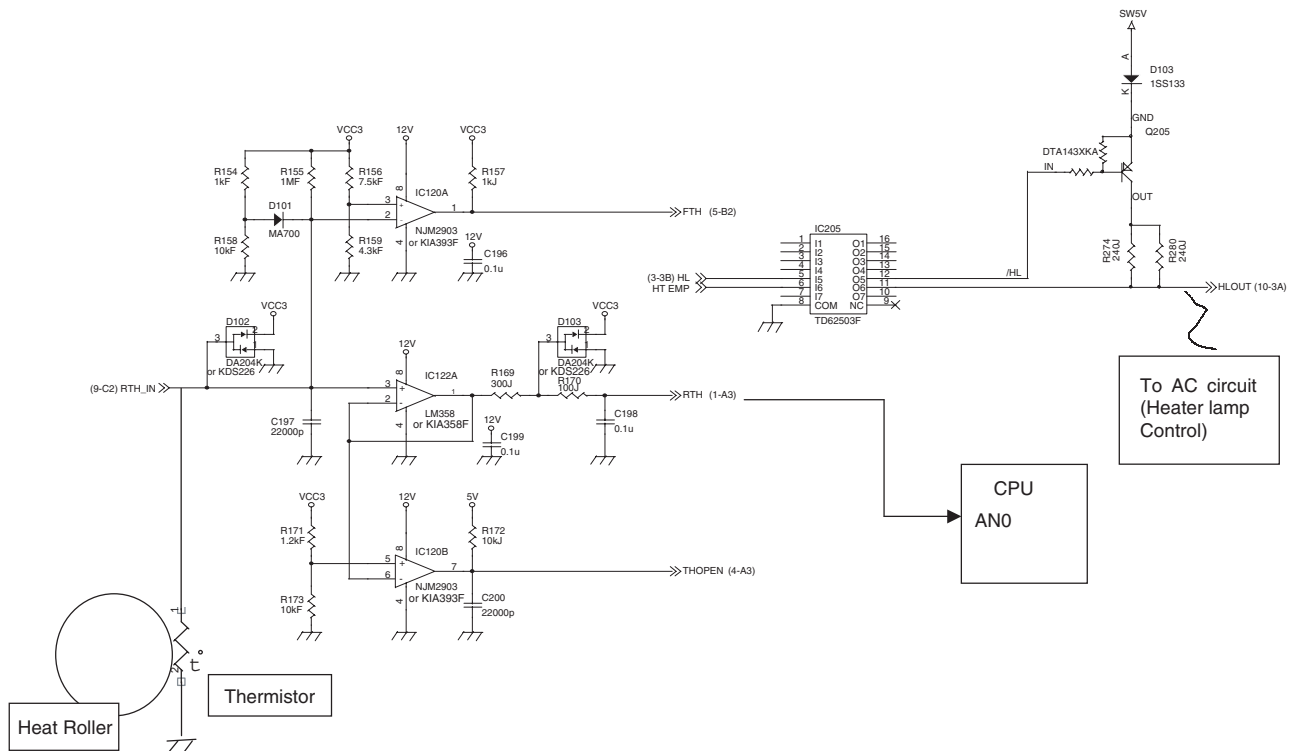
| PIN No. | Signal Name | IN/OUT | Connected to | Description |
|---------|-------------------|--------|--------------|-----------------------------------------|
| 189 | afp_data0 | IN | CCD PWB | Image scan data |
| 190 | GND(CORE/DC) | Power | | |
| 191 | sclk | IN | | Clock |
| 192 | tm2_24m | | | (Not used) |
| 193 | GND(PLL) | Power | | |
| 194 | VCC(PLL) 3.3V | Power | | |
| 195 | GND(PLL) | Power | | |
| 196 | VCC(PLL) 3.3V | Power | | |
| 197 | VCC(CORE/DC) 3.3V | Power | | |
| 198 | mtr_y1 | OUT | Tr array IC | Carriage motor current control signal |
| 199 | mtr_phase1 | OUT | Motor driver | Carriage motor control signal |
| 200 | GND(CORE/DC) | Power | | |
| 201 | mtr_i01 | OUT | Motor driver | Carriage motor control signal |
| 202 | mtr_i11 | OUT | Motor driver | Carriage motor control signal |
| 203 | mtr_i21 | OUT | Motor driver | Carriage motor control signal |
| 204 | mtr_phase2 | OUT | Motor driver | Carriage motor control signal |
| 205 | VCC(CORE/DC) 3.3V | Power | | |
| 206 | mtr_i02 | OUT | Motor driver | Carriage motor control signal |
| 207 | mtr_i12 | OUT | Motor driver | Carriage motor control signal |
| 208 | mtr_i22 | OUT | Motor driver | Carriage motor control signal |
| 209 | mtr_y2 | OUT | Tr array IC | Carriage motor current control signal |
| 210 | VCC(AC) 3.3V | Power | | |
| 211 | xsync | IN | LSU | Horizontal sync signal from LSU (/SYNC) |
| 212 | xld | OUT | LSU | Laser drive signal (/VIDEO) |
| 213 | GND(AC) | Power | | |
| 214 | xlend | OUT | LSU | Laser APC signal (/LEND) |
| 215 | xcpwr | IN | CPU | CPU write signal |
| 216 | xcpurd | IN | CPU | CPU read signal |
| 217 | scanstop | IN | CPU | Scan stop signal |
| 218 | scanst | IN | CPU | Scan start signal |
| 219 | transst | IN | CPU | Data transfer start signal |
| 220 | printst | IN | CPU | Print start signal |
| 221 | tmen | IN | CPU | Toner motor clock enable signal |
| 222 | testpin4 | | | (Not used) |
| 223 | VCC(CORE/DC) 3.3V | Power | | |
| 224 | testpin3 | | | (Not used) |
| 225 | tmclk | IN | | Toner motor clock signal |
| 226 | GND(CORE/DC) | Power | | |
| 227 | testpin2 | | | (Not used) |
| 228 | testpin1 | | | (Not used) |
| 229 | testpin0 | | | (Not used) |
| 230 | cpudata15 | IN/OUT | CPU | CPU data bus |
| 231 | cpudata14 | IN/OUT | CPU | CPU data bus |
| 232 | cpudata13 | IN/OUT | CPU | CPU data bus |
| 233 | cpudata12 | IN/OUT | CPU | CPU data bus |
| 234 | cpudata11 | IN/OUT | CPU | CPU data bus |

| PIN No. | Signal Name | IN/OUT | Connected to | Description |
|---------|-------------------|--------|--------------|-----------------|
| 235 | cpudata10 | IN/OUT | CPU | CPU data bus |
| 236 | VCC(AC) 3.3V | Power | | |
| 237 | cpudata9 | IN/OUT | CPU | CPU data bus |
| 238 | cpudata8 | IN/OUT | CPU | CPU data bus |
| 239 | GND(CORE/DC) | Power | | |
| 240 | cpudata7 | IN/OUT | CPU | CPU data bus |
| 241 | cpudata6 | IN/OUT | CPU | CPU data bus |
| 242 | cpudata5 | IN/OUT | CPU | CPU data bus |
| 243 | cpudata4 | IN/OUT | CPU | CPU data bus |
| 244 | VCC(CORE/DC) 3.3V | Power | | |
| 245 | cpudata3 | IN/OUT | CPU | CPU data bus |
| 246 | cpudata2 | IN/OUT | CPU | CPU data bus |
| 247 | cpudata1 | IN/OUT | CPU | CPU data bus |
| 248 | cpudata0 | IN/OUT | CPU | CPU data bus |
| 249 | VCC(AC) 3.3V | Power | | |
| 250 | xcpcs | IN | CPU | CS signal |
| 251 | mem_intr | | | (Not used) |
| 252 | GND(AC) | Power | | |
| 253 | arb_intr | OUT | CPU | INTR signal |
| 254 | cpusync | OUT | CPU | CPU SYNC signal |
| 255 | cpu_ad9 | IN | CPU | CPU address bus |
| 256 | cpu_ad8 | IN | CPU | CPU address bus |

(4) Heater lamp control circuit

a. Outline

The heater lamp control circuit detects the heat roller surface temperature and converts it into a voltage level. The converted voltage is inputted to the CPU analog input pin.



The lower the heat roller surface temperature is, the greater the thermistor resistance is, and vice versa.

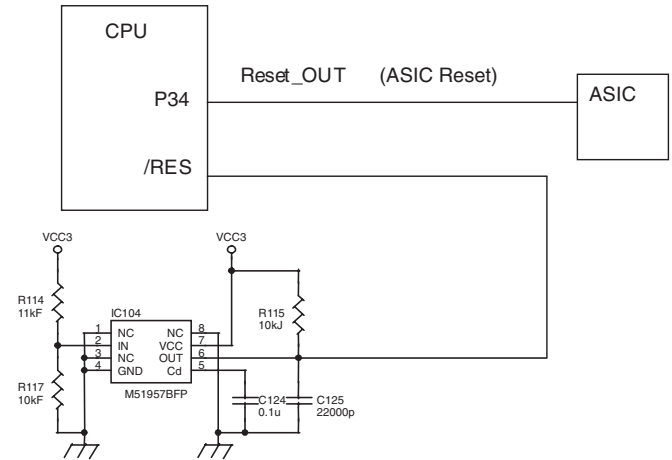
Therefore, the lower the heat roller surface temperature is, the higher the thermistor terminal voltage is, and vice versa. The thermistor terminal voltage is inputted to the CPU analog port.

The CPU controls ON/OFF of the heater lamp by this input voltage level.

(3) Reset circuit

This circuit detects ON/OFF of power to control start/stop of each circuit. The 3.3V voltage of the main PWB is detected by the reset IC to generate the reset signal.

When the power voltage reaches the specified level, the circuit operations are started. Before the power voltage falls below the specified level, the circuit operations are stopped to prevent against malfunctions.



The CPU converts the inputted analog voltage into a digital signal level and compares it with the set value of the simulation to control on/off the heater lamp according to the level, maintaining the heat roller surface temperature at a constant level.

[High temperature protect circuit in case of CPU hung up]

For IC120 3pin (reference voltage), +3.3V is divided by the resistor.

The thermistor terminal voltage is inputted to IC120 2pin.

When, the voltage at 2pin becomes lower than the voltage at 3pin (when the heat roller temperature is about 220 – 230°C), IC120 1pin becomes HIGH, and the HL signal is lowered to the GND potential through IC124, stopping generation of the heater lamp ON signal. (IC120 1pin is normal LOW.)

[When the heat roller surface temperature is lower than the set level]

- 1) Since the thermistor terminal voltage is higher than the set level, the HL signal from the CPU becomes HIGH.
- 2) The HL signal is turned to be the HLOUT signal through IC124 protect circuit, and inputted to the photo triac coupler on the power PWB.
- 3) When the internal triac turns on, a pulse is applied to the gate of the external triac. Consequently a current flow from the power source through the heater lamp to the triac, lighting the heater lamp.

[When the heat roller surface temperature is higher than the set level]

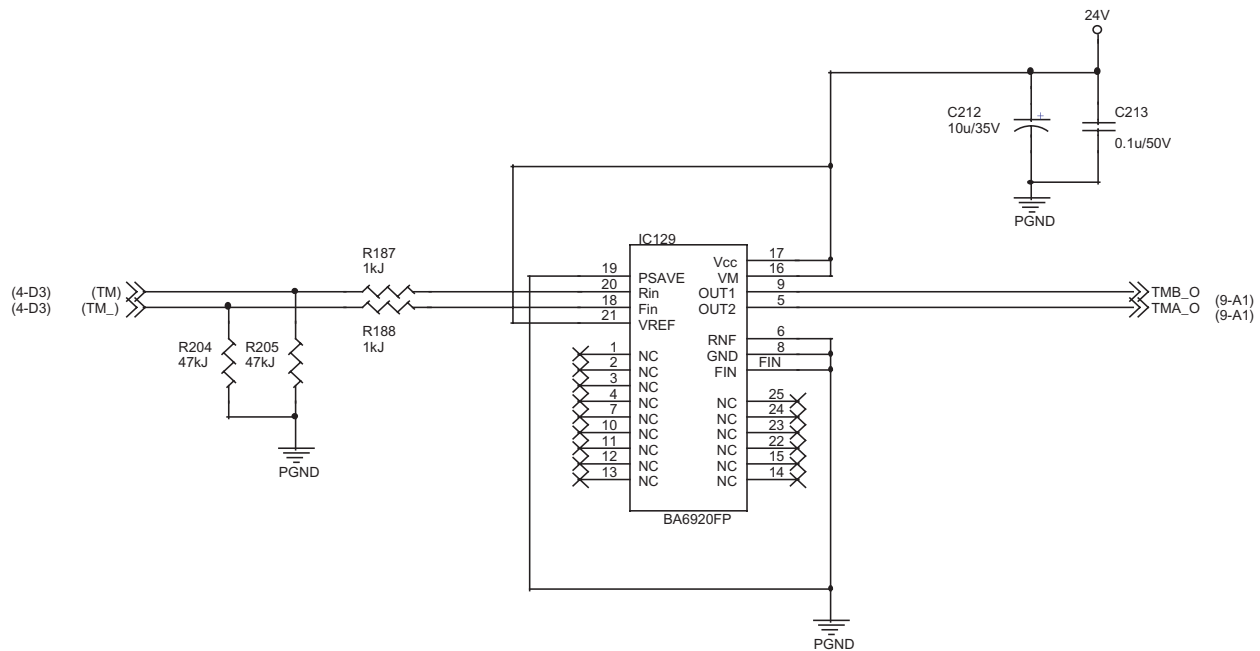
- 1) Since the thermistor terminal voltage becomes lower than the set value, the HL signal from the CPU becomes LOW.
- 2) The HL turns LOW, the photo triac coupler on the power PWB turns OFF, the external triac turns OFF, and the heater lamp turns OFF.

[In case of the thermistor open]

The voltage at IC120 6pin over the voltage at 5pin to drive the output THOPEN at 7pin to LOW. This is passed to the CPU and the trouble code "H2" is displayed.

(6) Toner supply motor drive circuit

The IC129 is the motor control IC, which generates the pseudo AC waveform with the pulse signals (TM, TM-) outputted from ASIC, driving the toner supply motor.



(7) Main motor drive circuit

The main motor is driven by the MMD signal from ASIC. While the main motor is rotating, the MMD signal is driven to HIGH and passed through IC125 to the control circuit in the main motor to rotate the main motor. When the main motor speed reaches the specified rpm, the MMLD signal is turned LOW and passed through IC115 to the CPU.

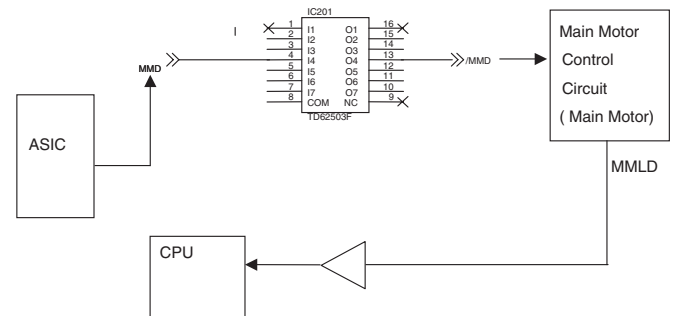
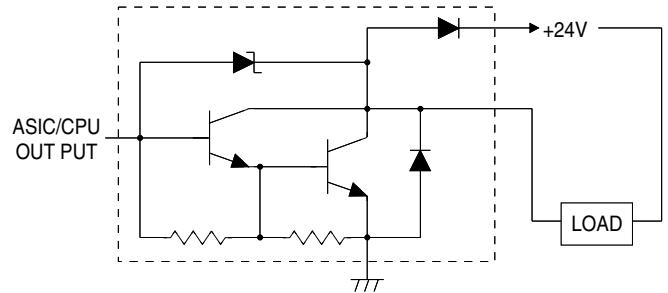
(5) Driver circuit (Solenoid)

a. Outline

Since the load signal from the CPU or the ASIC cannot drive the load directly, it is passed through the driver IC to drive the load.

b. Operation

The driver circuit forms a Darlington circuit with transistors. Therefore a large drive current is obtained from a small current (ASIC output current). When the driver input voltage (base resistance input) is HIGH (+3.3V), the transistor turns ON to flow a current in the arrow direction, operating the load. When the driver is ON, the driver output terminal voltage is 0V.

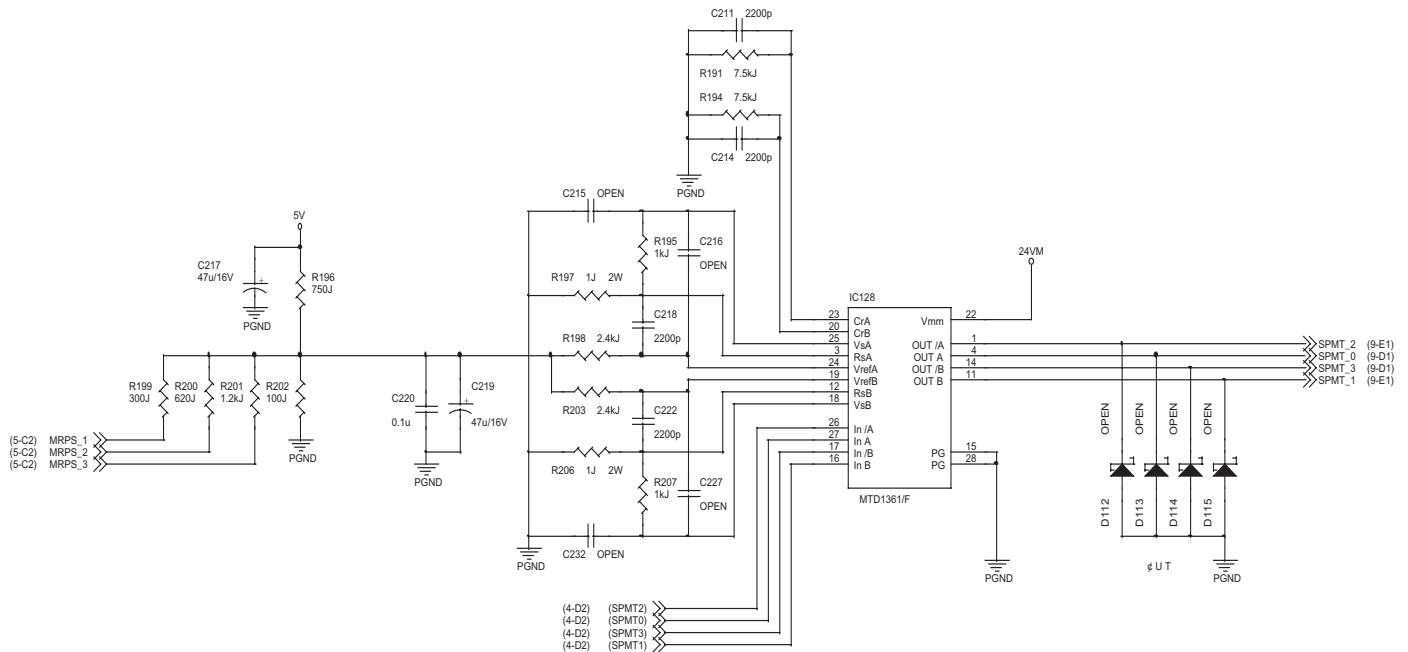


(8) Mirror motor control circuit, Duplex motor control circuit

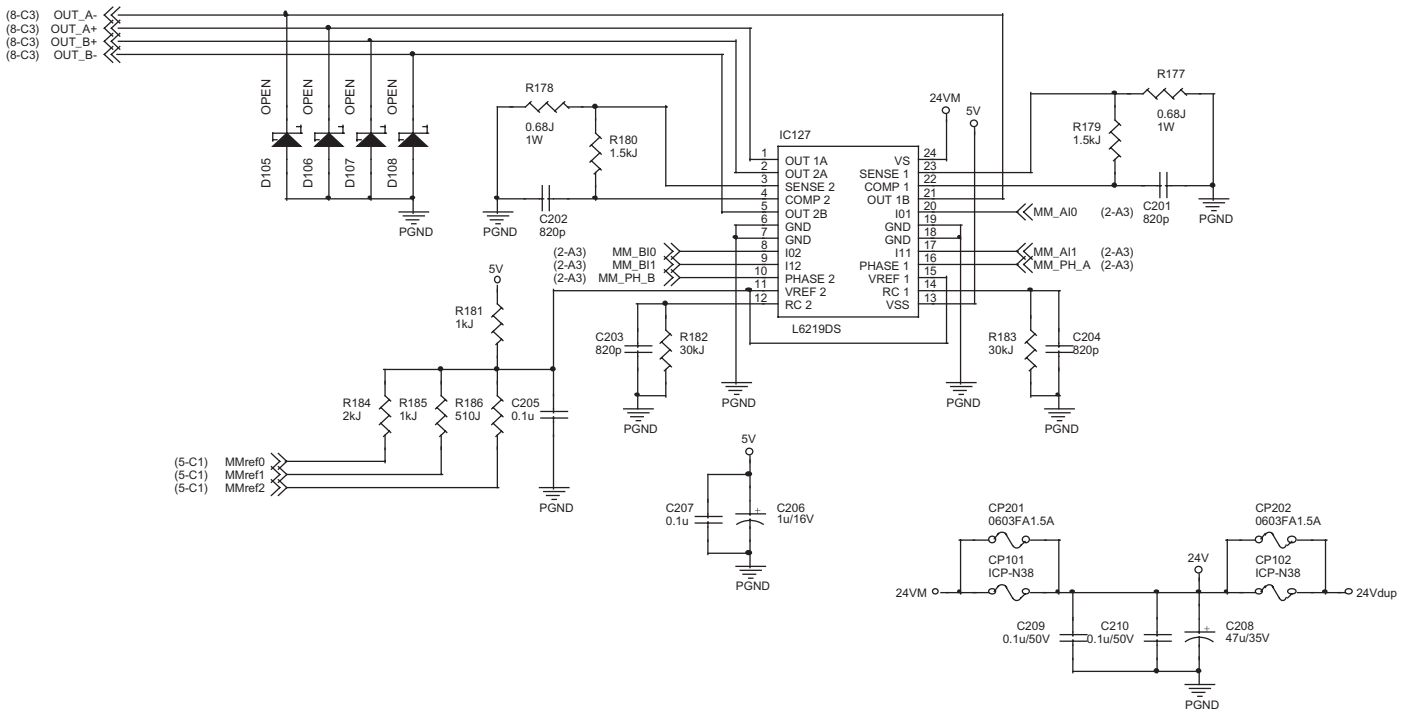
Stepping motors are employed for the mirror motor, the SPF motor, and the duplex motor. The driver for IC127 (for mirror motor) is the bipolar drive L6219DS, and the driver for IC128 (for SPF) is the unipolar drive IC MTD1361F. For control, the SPF outputs the drive signal from the CPU to the IC, and the mirror outputs the drive signal to the IC with the ASIC. They drive each motor in 1-2 phase excitement or 2-phase excitement.

Each motor switches the motor current value in each magnification ratio.

• SPF motor drive circuit



• Mirror motor drive circuit



(9) Operation circuit

a. General

The operation circuit is composed of the key matrix circuit and the display matrix circuit.

b. Key matrix circuit

Select signals SELIN 1 – 3 are sent from the CPU of the MCU to the selector in the operation circuit.

The signals detecting OFF/ON of the key are sent to the CPU as KIN 1 – 2.

c. Display circuit

The display is controlled by sending the data signal from the CPU of the MCU, the clock signals, and the latch signals from the ASIC to the LED driver in the operation circuit.

* The basic circuitry is the same as that of Puma.

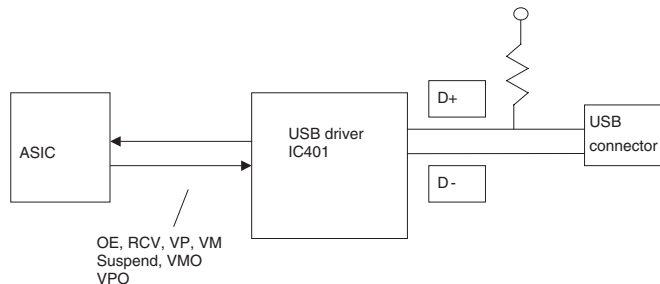
(10) I/F circuit

a. General

The I/F circuit is composed of the USB driver and the IEEE1284 driver, and performs hard interface with the ASIC (MCU PWB).

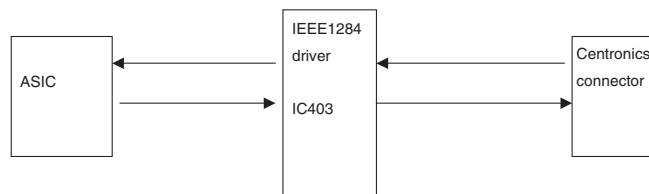
b. USB circuit

With the USB driver, the differential signals (analog) of USB are converted into digital signal, which are sent to the ASIC. In the reverse procedure, interface between the ASIC (engine) and the host is performed.



c. IEEE1284 circuit

The IEEE1284 driver is used to perform interface between the ASIC (engine) and the host.



(11) Carriage unit

a. General

The carriage unit is provided with the CCD PWB, the inverter PWB, and the lamps. It scans documents and transfers AD-converted image data to the ASIC.

b. CCD PWB

The CCD on the CCD PWB employs the color image sensor uPD8861 of 5400 pixels x 3 lines, and scans documents in the main scanning direction in the resolution of 600dpi/US letter size.

Image data scanned by the CCD are inputted to the AFE (AD9826), and subject to CDS, amplification, and AD-conversion. Then digital data are outputted to the MCU PWB and to the ASIC, which performs image process of the digital data.

c. Lamp inverter PWB

The transformer is controlled by the lamp control signal from the MCU PWB. The transformer output controls lighting of the cool cathode ray tube.

B. DC power circuit

The DC power circuit directly rectifies the AC power and performs switching-conversion with the DC/DC converter circuit, and rectifies and smoothes again to generate a DC voltage.

The constant voltage control circuit is of +5VEN. +24V and +12V are of the non-control system by winding from the +5VEN winding. As shown in fig (1), +24V, +12V, and +5V are provided with the ON/OFF function by external signals. +3.3V is outputted from +5VEN to the regulator IC. Refer to the block diagram, fig (1).

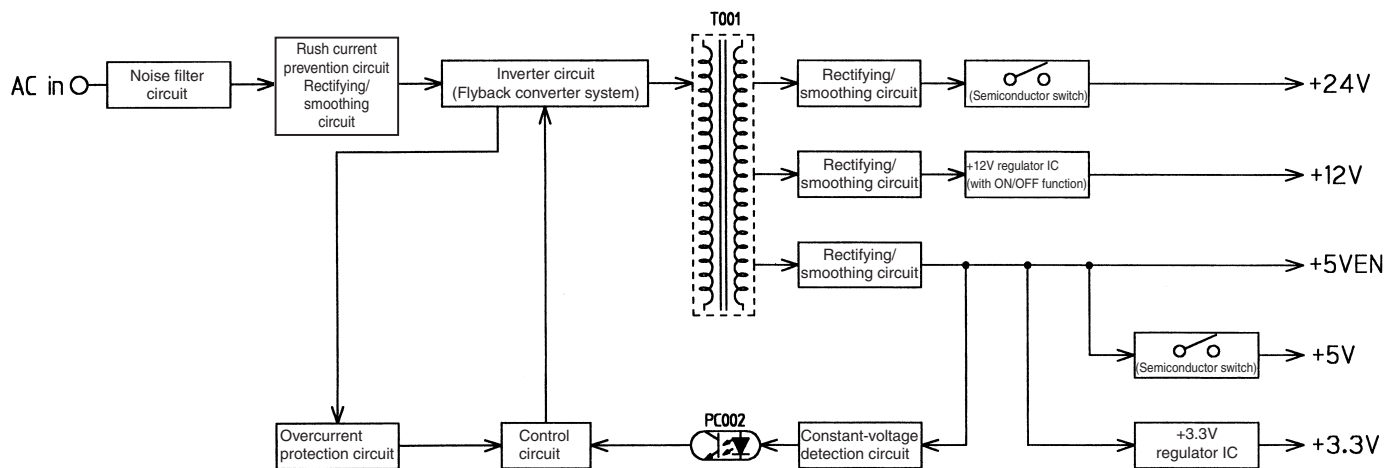


fig (1) Block diagram

(1) Noise filter circuit

The filter circuit is composed of L and C. It reduces common noises and normal mode noises generated from the AC line.

The common noise means that generated in each line for GND. Its noise component is delivered through C001, C003, and C007 to GND.

The normal noise means that overlapped in the AC line or the output line. It is attenuated by C002, L001, C006, and L002. Refer to fig (2).

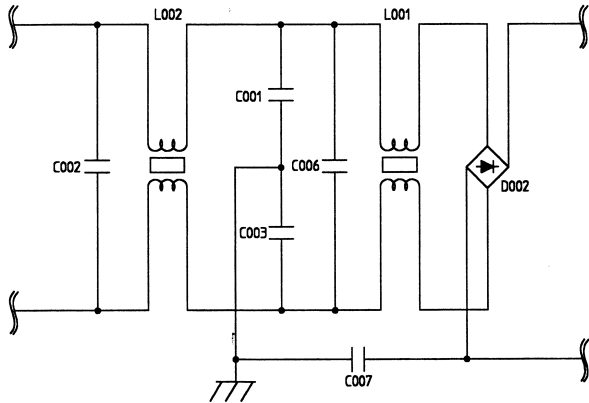


fig (2) Noise filter circuit

(2) Rush current prevention circuit and rectifying/smoothing circuit

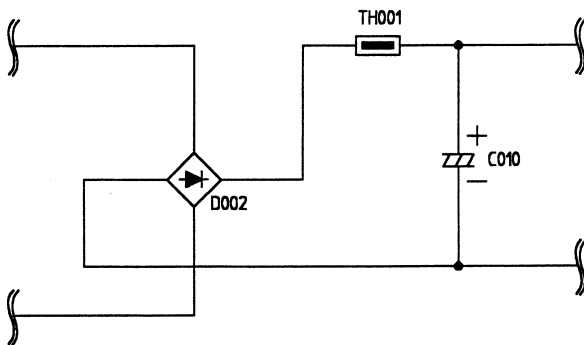


fig (3) Rush current prevention, rectifying/smoothing circuit

Since the AC power is directly rectified, if there were not this rush current prevention resistor (TH001), an extremely large rush current would flow due to a charging current flowing through the smoothing capacitor C010 when turning on the power.

To prevent against this, the rush current prevention resistor TH001 is provided between the rectifying diode D002 and the smoothing diode C010, suppressing a rush current.

The rectifying/smoothing circuit rectifies a 50/60Hz AC voltage with the rectifying circuit, and smoothes it with the smoothing capacitor C010.

(3) Inverter and control circuit (Flyback converter system)

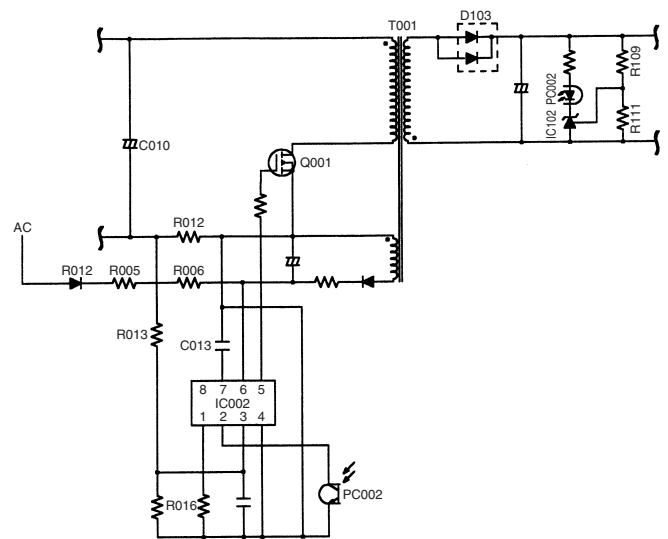


fig (4) Inverter and control circuit

This circuit is one-stone separate excitation DC-DC converter called flyback converter, as shown in fig (4).

When an electromotive voltage of IC is applied through D012, R005, and R006 to IC002, IC002 oscillates to conduct Q001.

As a result, a voltage is applied to the primary winding of the converter transformer (T001) and at the same time a voltage is generated in the driving winding of IC002 to operate IC002. Then IC002 turns ON/OFF Q001 at the frequency of about 70KHz determined by R016.

Under the ON state, the voltage in the secondary winding is reversed to the diode D103 and no current flows through the secondary winding of T001.

Under the OFF state, the current flowing through the primary winding is in the same direction as the primary winding, conducting D103 and transmitting energy to the secondary winding. Refer to fig (4).

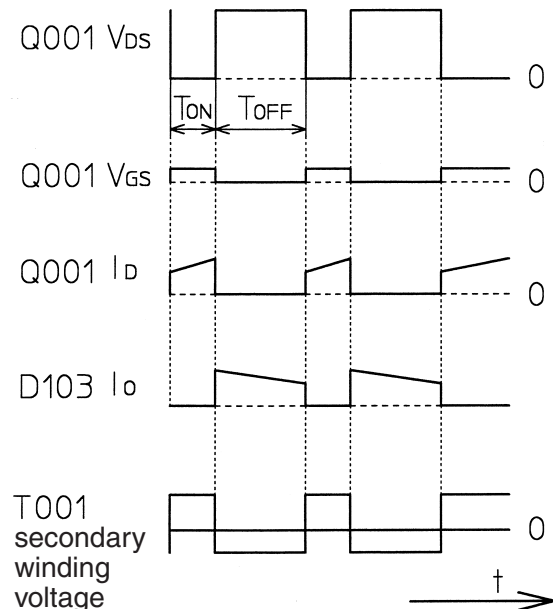


fig (5) Operation waveform of the flyback converter

The control circuit is subject to negative feedback from the secondary side as shown in fig (4). A photo coupler (PC002) is employed to insulate between the primary side and the secondary side to feed back the control signal to the primary side.

When the output voltage is increased by energy transmission from T001, the voltage detected by R109 and R111 is compared with the reference voltage of IC102. When it exceeds the reference voltage, the current flowing through IC102 (that is, the photo diode current of PC002) is increased and transmitted to the primary side. Then the potential at the feedback pin (2 pin) of IC102 is decreased to control Q001. Therefore, the change in the output voltage on the secondary side is passed through IC102 and PC002 to control Q001, stabilizing the output voltage.

(4) Overcurrent protection circuit (Primary side)

The inverter circuit of the primary side is connected with the current detection resistor R102. When an overcurrent occurs in the secondary side, the current flowing through the primary side inverter Q001 is increased. The current is detected by R012, and passed through R013 to IC701 overcurrent restricting pin (3 pin) to turn OFF Q002, shutting off all power. To resupply the power, turn off and on the power. Refer to fig (4).

(5) Rectifying/smoothing circuit (+5V)

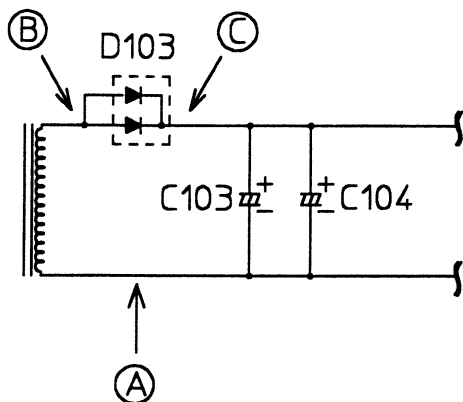


fig (6) Rectifying/smoothing circuit

The high frequency pulse generated by the inverter circuit is decreased by the converter transformer, rectified by the high frequency diode D103, and smoothed by C103 and C104.

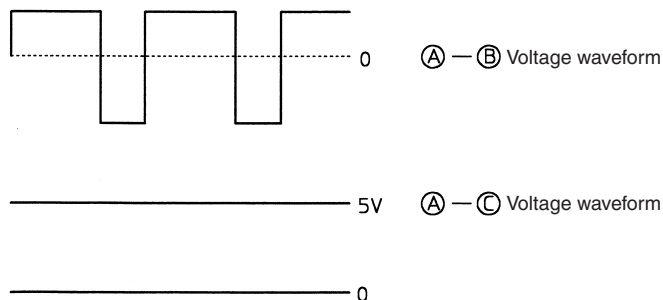


fig (7) +5V rectifying/smoothing circuit voltage waveform

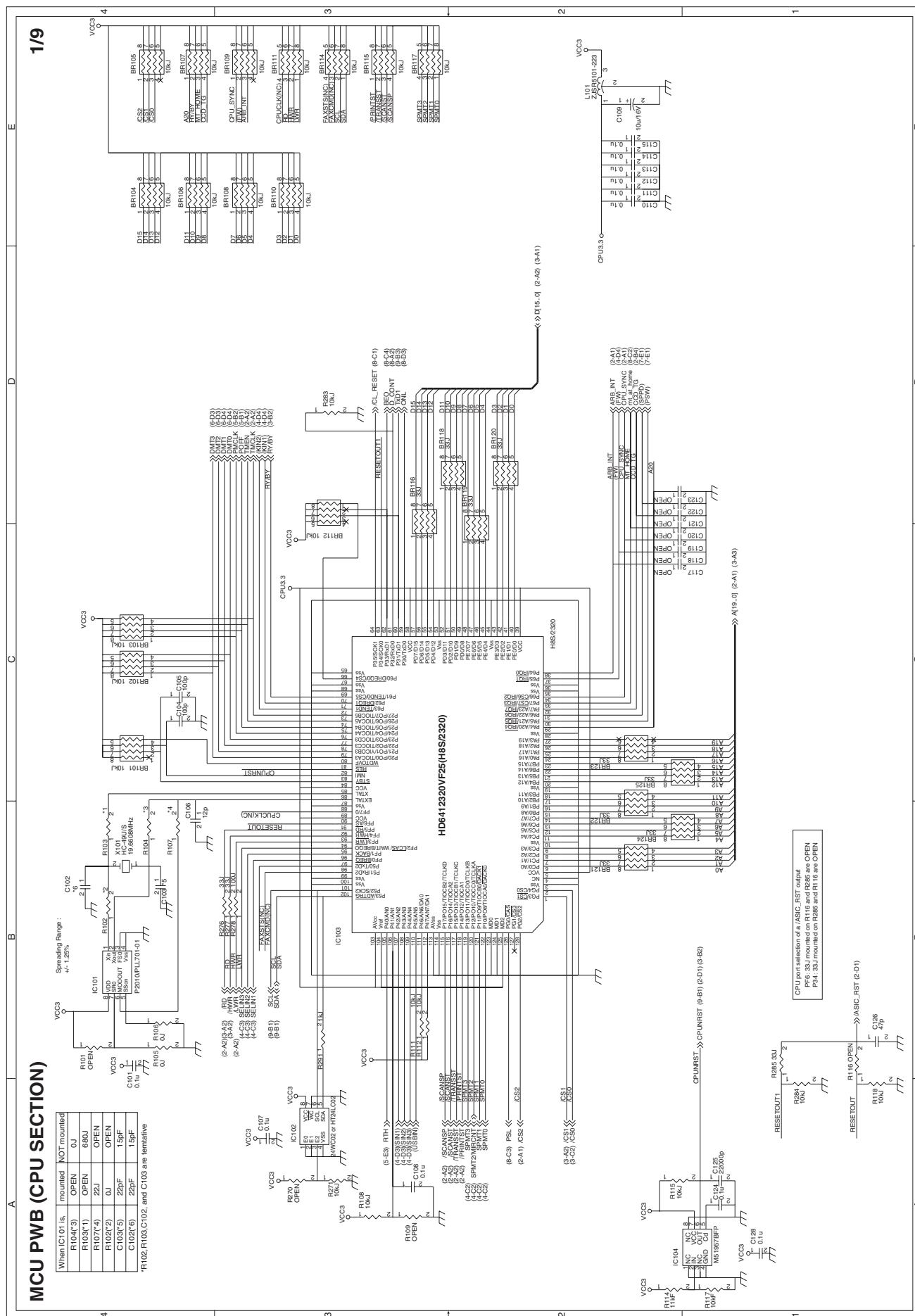
[13] CIRCUIT DIAGRAM

1. MCU PWB

MCU PWB (CPU SECTION)

| When IC101 is, | mounted | NOT mounted |
|----------------|---------|-------------|
| R104("3) | OPEN | 0J |
| R103("1) | OPEN | 680J |
| R107("4) | 22J | OPEN |
| R102("2) | 0J | OPEN |
| C103("5) | 22pF | 15pF |
| C102("6) | 22pF | 15pF |

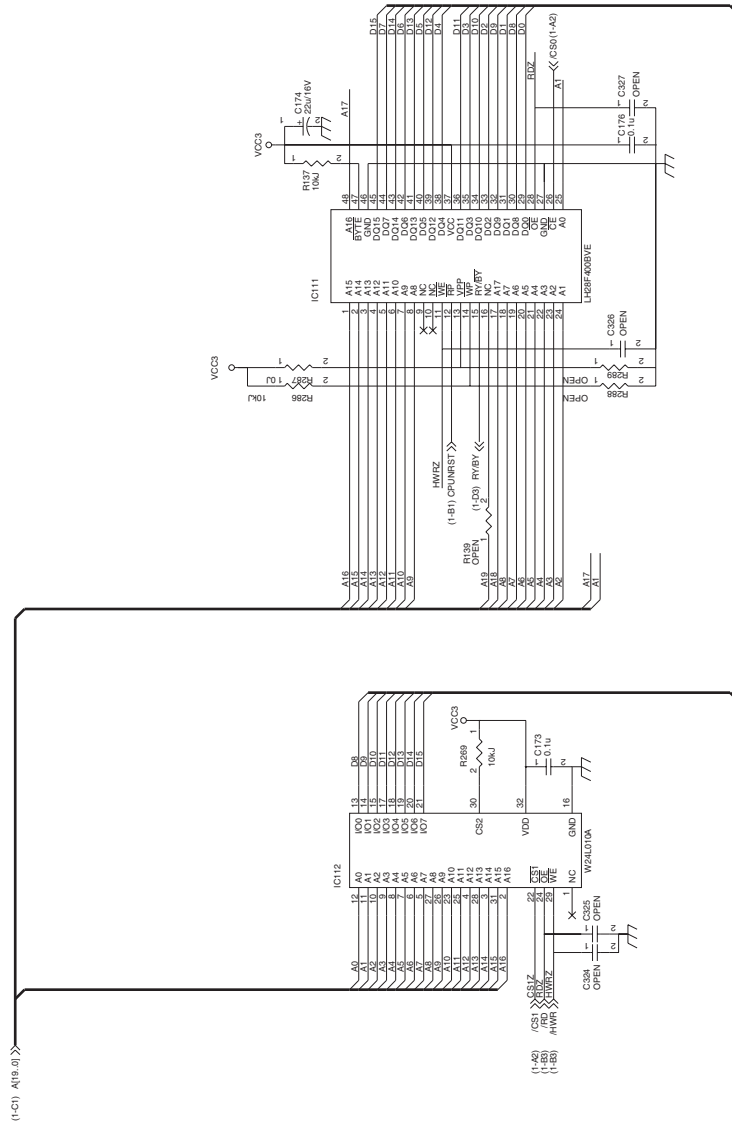
R102, R103, C102, and C103 are tentative





MCU PWB (MEMORY SECTION)

3/9

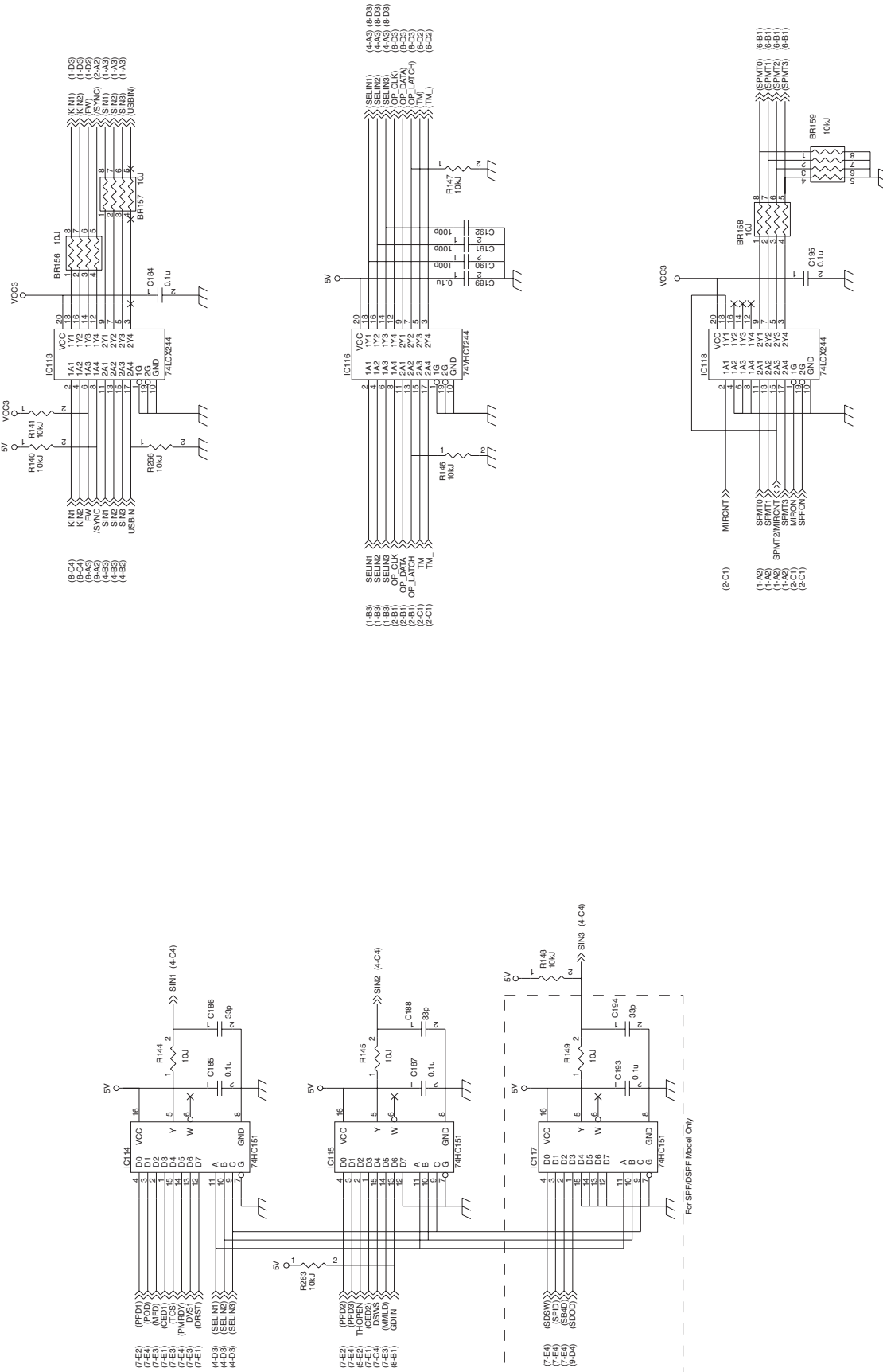


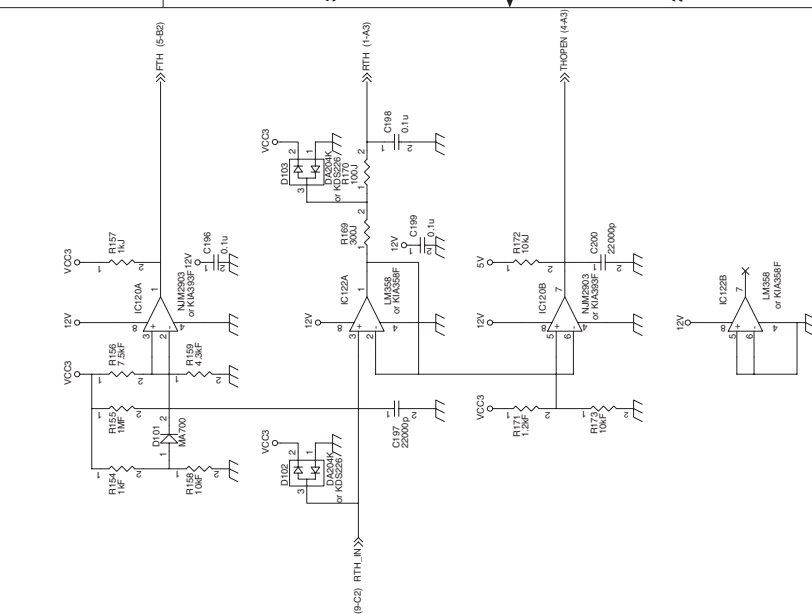
SDRAM

| Model | Vendor/Type |
|--------------|----------------------------------------------------------------------------------------------------------------|
| 12/13/14 CPM | HY57V641620HGT-P (Hyundai) MT48LC4M16A2TG-75 (Micron) K4S841632F-TC75 (Samsung) W986416DH-7 (Winbond) |
| 15CPM | MT48LC8M16A2TG-75 (Micron) HY57V681620AT (Hyundai) K4S281632D-TC75 (Samsung) W981216BH-75 (Winbond) |

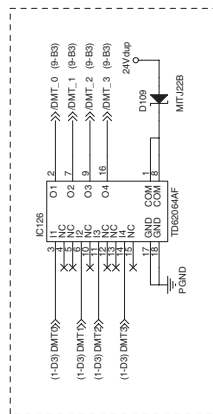
MCU PWB (DRIVER SECTION 1)

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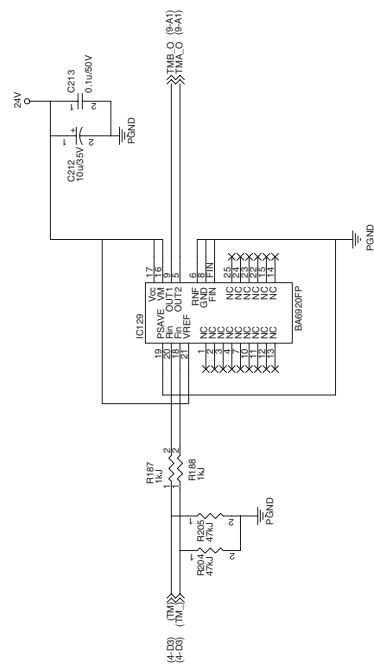




6/9



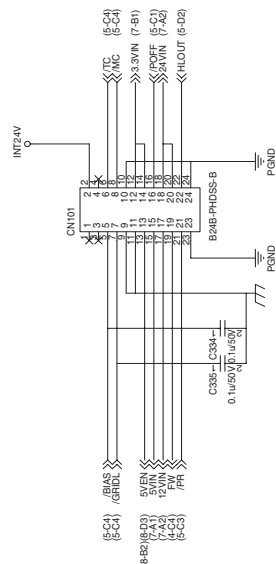
For DSPF Model Only



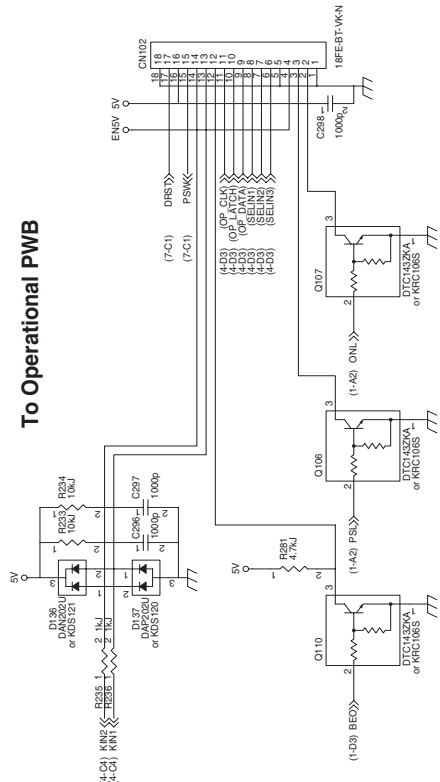
For SPF/DSPF Model Only

MCU PWB (CONNECTOR SECTION 1)

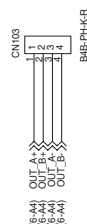
To Power unit



To Operational PWB

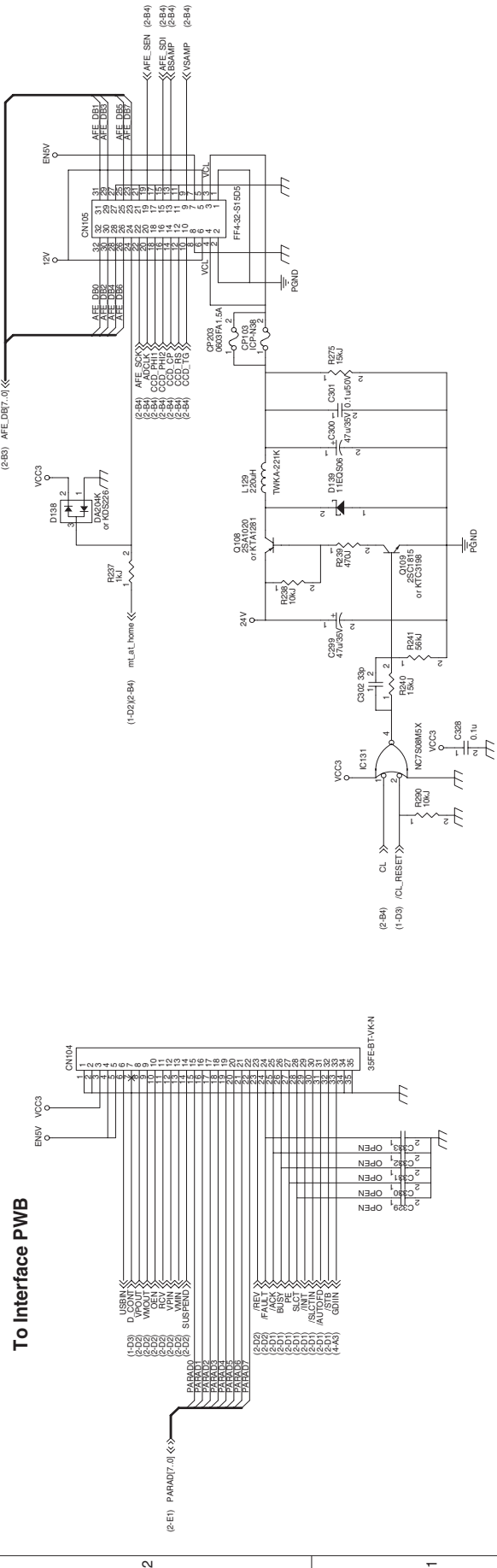


To Mirror motor



To Scanner unit

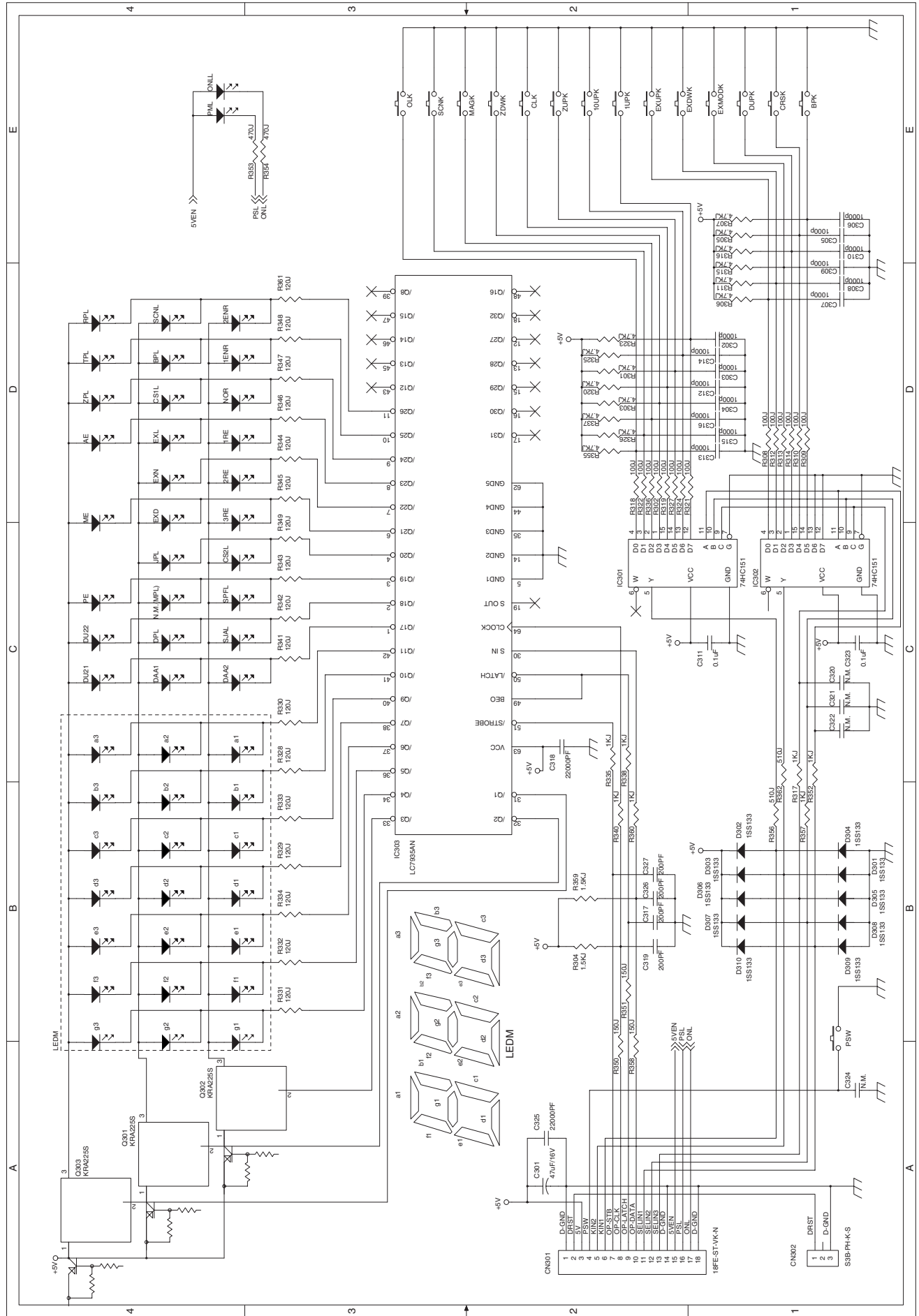
To Interface PWB



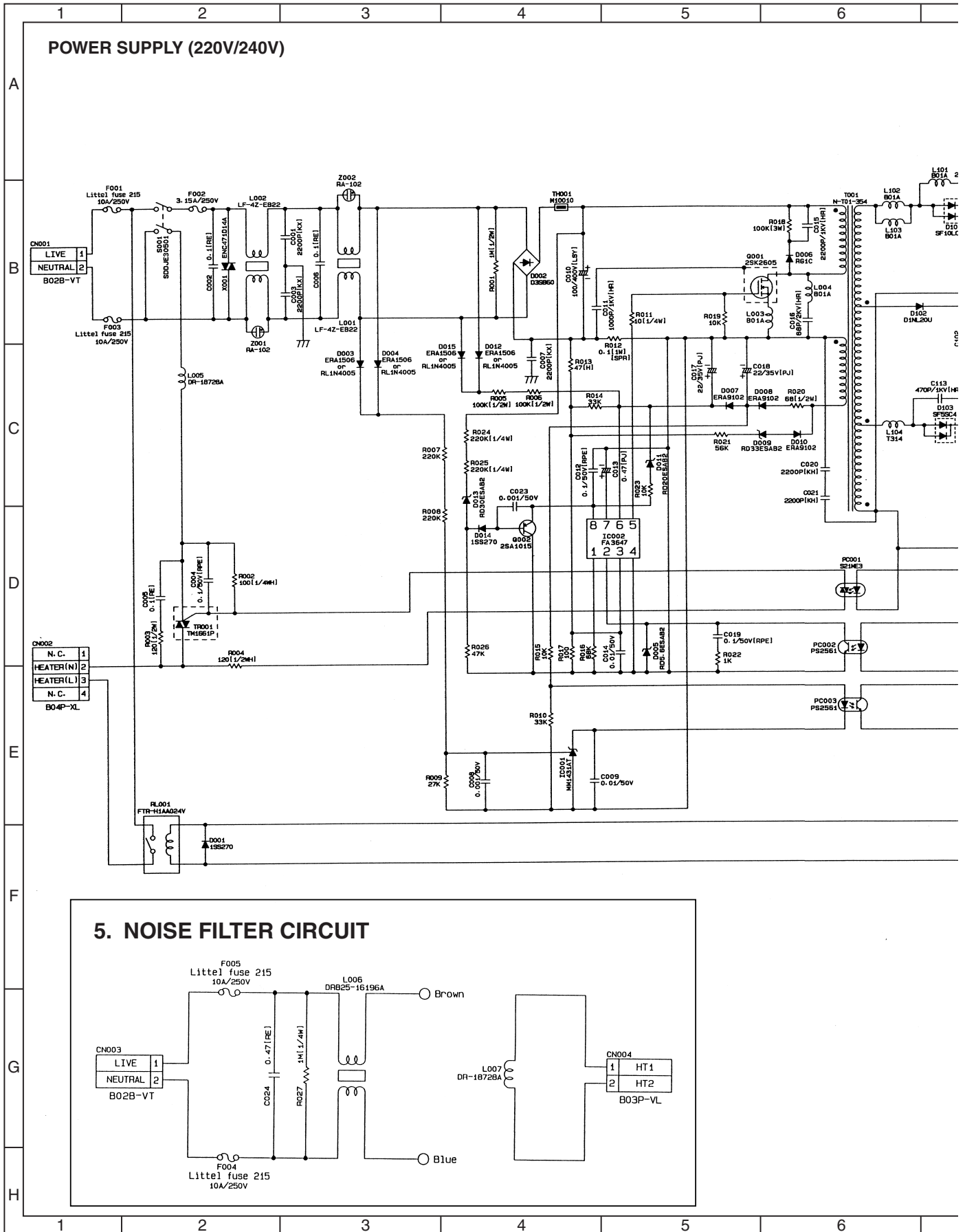
6/6

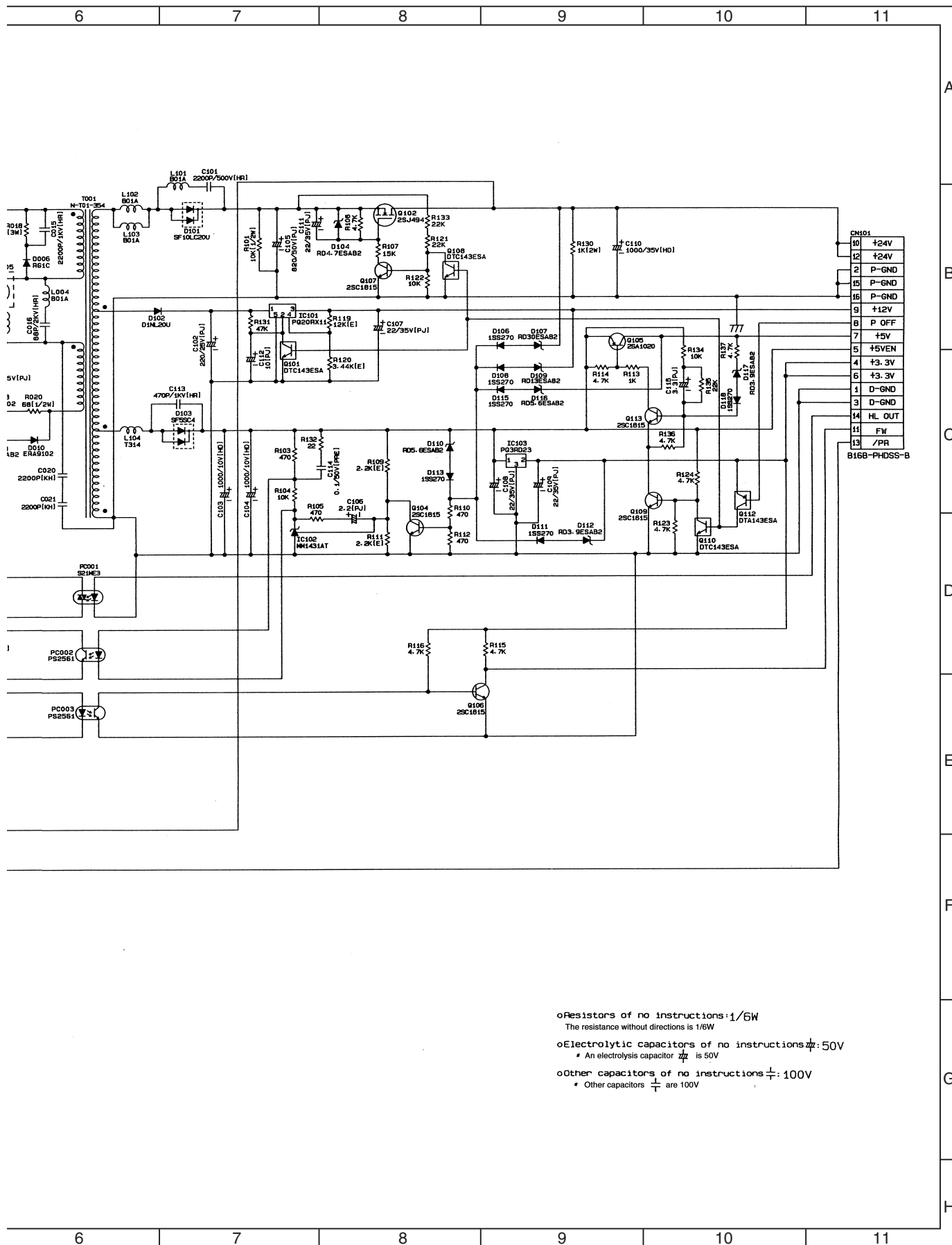


2. OPERATION PWB



4. POWER SUPPLY





oResistors of no instructions: $\frac{1}{6}W$

The resistance without directions is $\frac{1}{6}W$

oElectrolytic capacitors of no instructions $\frac{1}{2}$: 50V

* An electrolysis capacitor $\frac{1}{2}$ is 50V

oOther capacitors of no instructions $\frac{1}{2}$: 100V

* Other capacitors $\frac{1}{2}$ are 100V

ACTUAL WIRING DIAGRAM 1/7

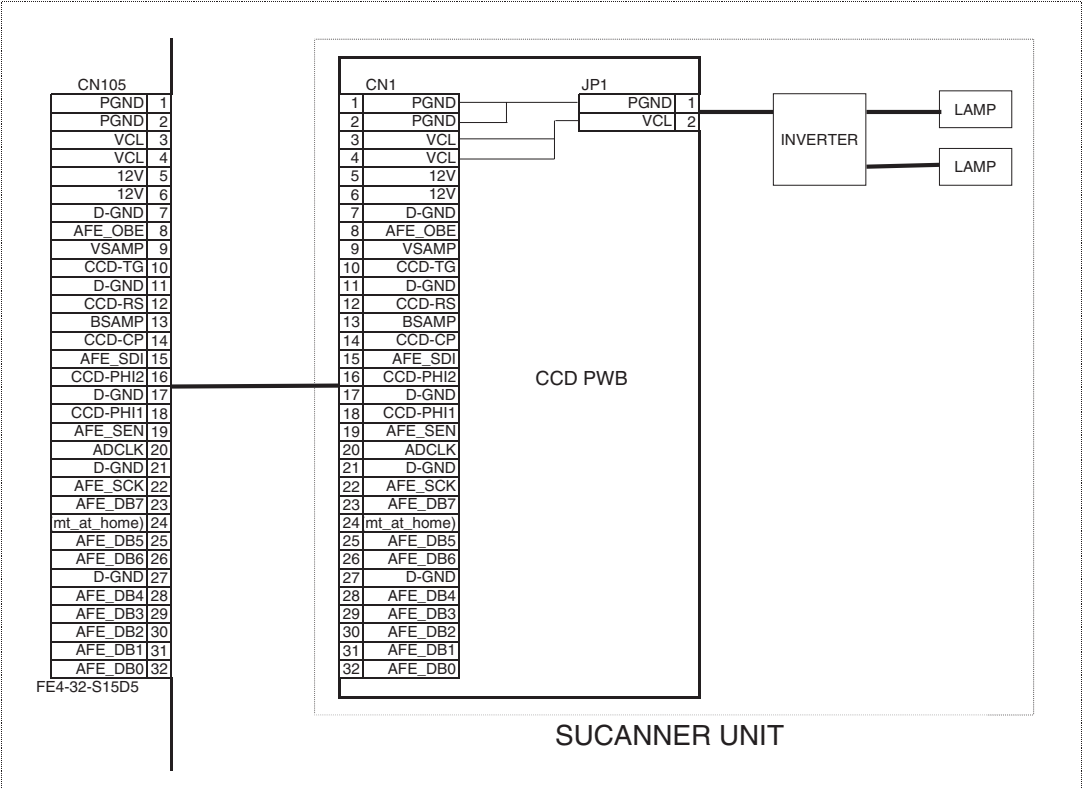


A

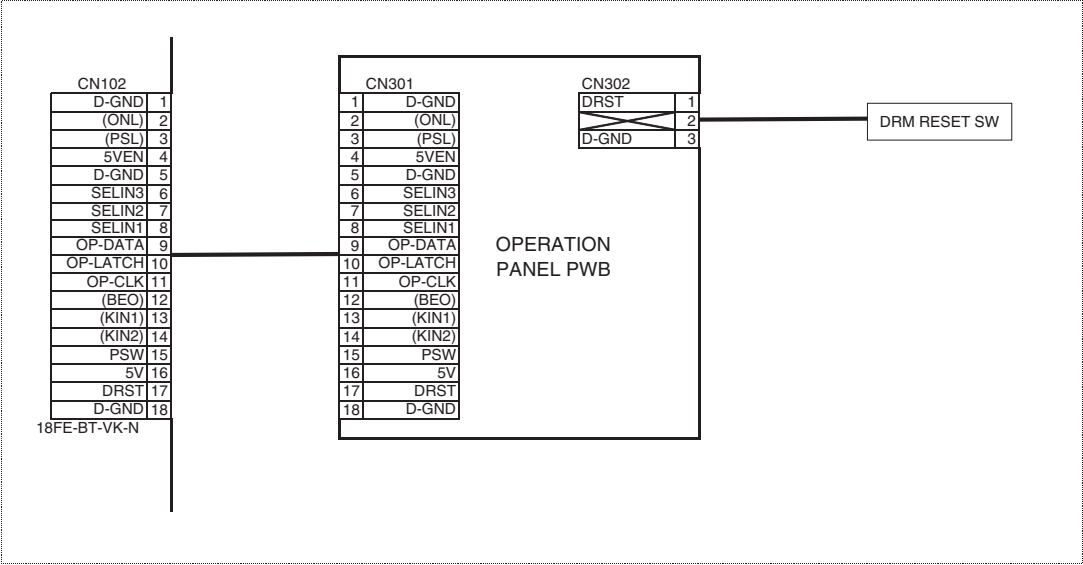


ACTUAL WIRING DIAGRAM 3/7 (SCANNER UNIT)

B

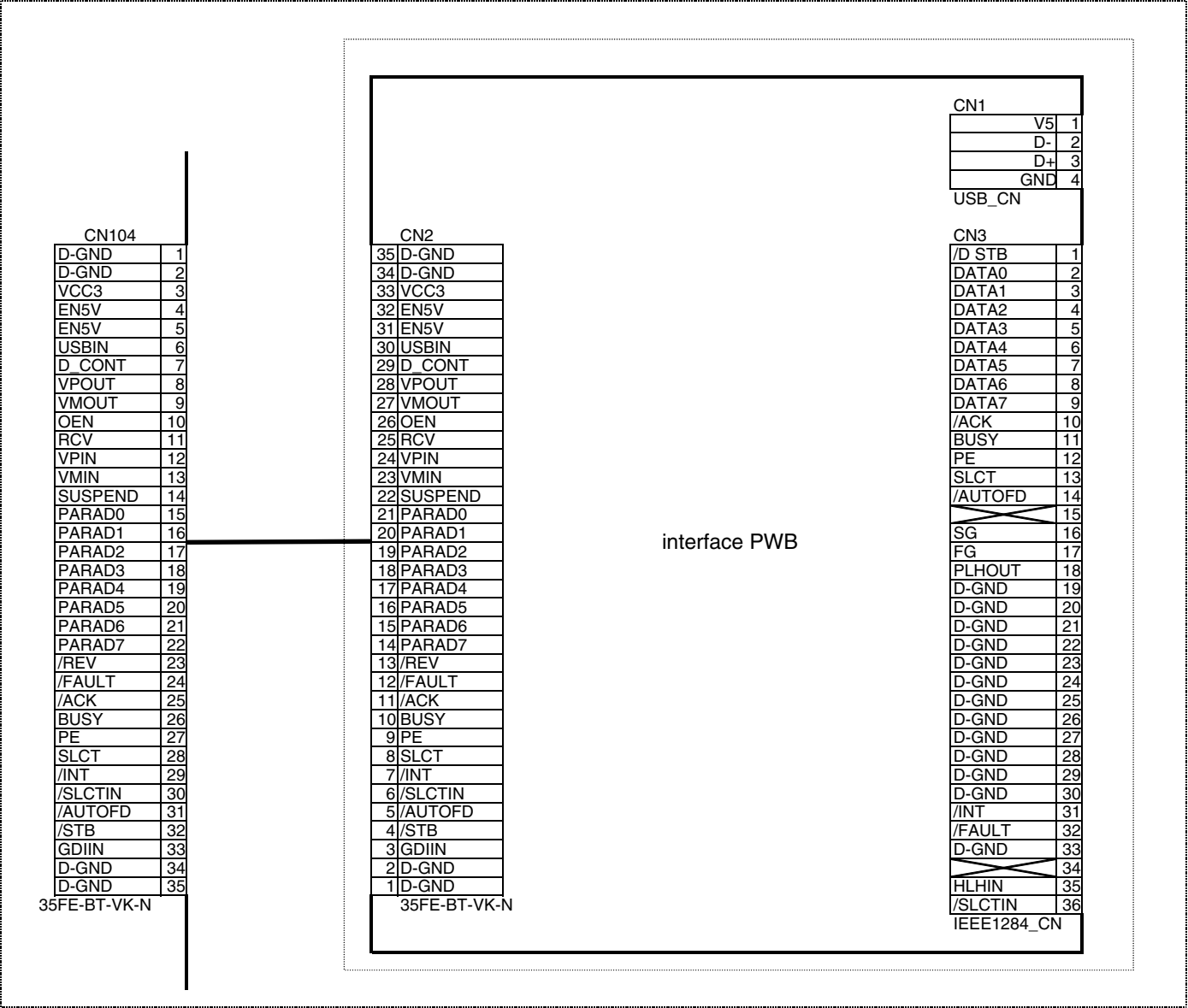


B



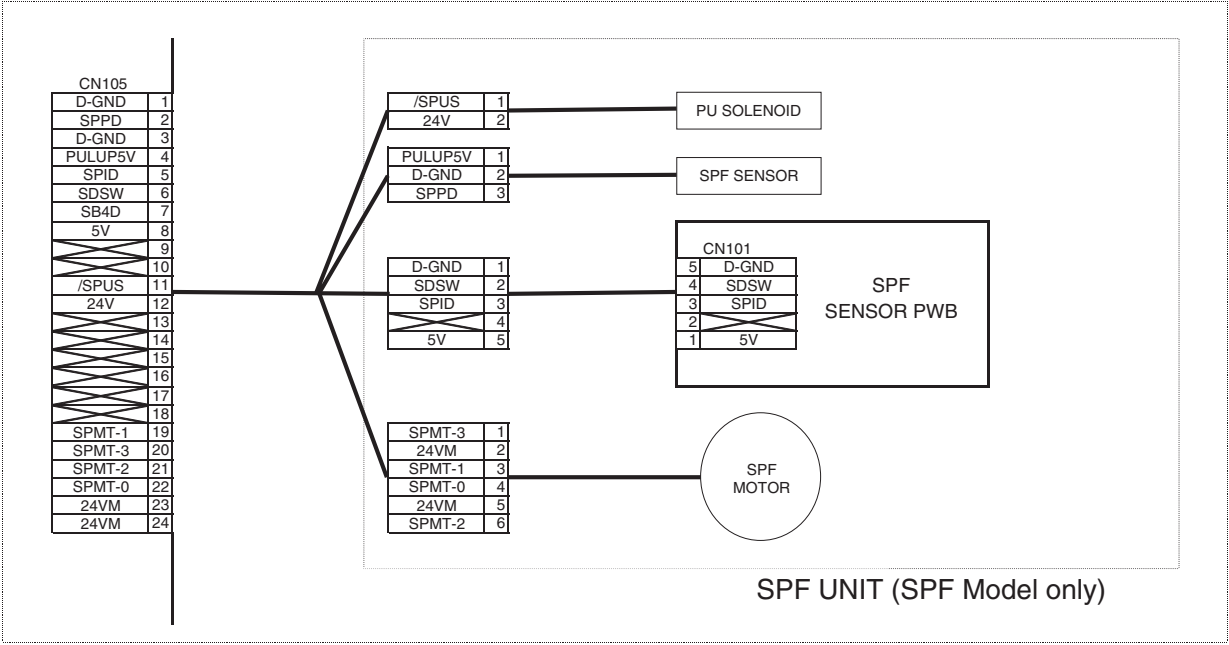
ACTUAL WIRING DIAGRAM 4/7 (INTERFACE)

C

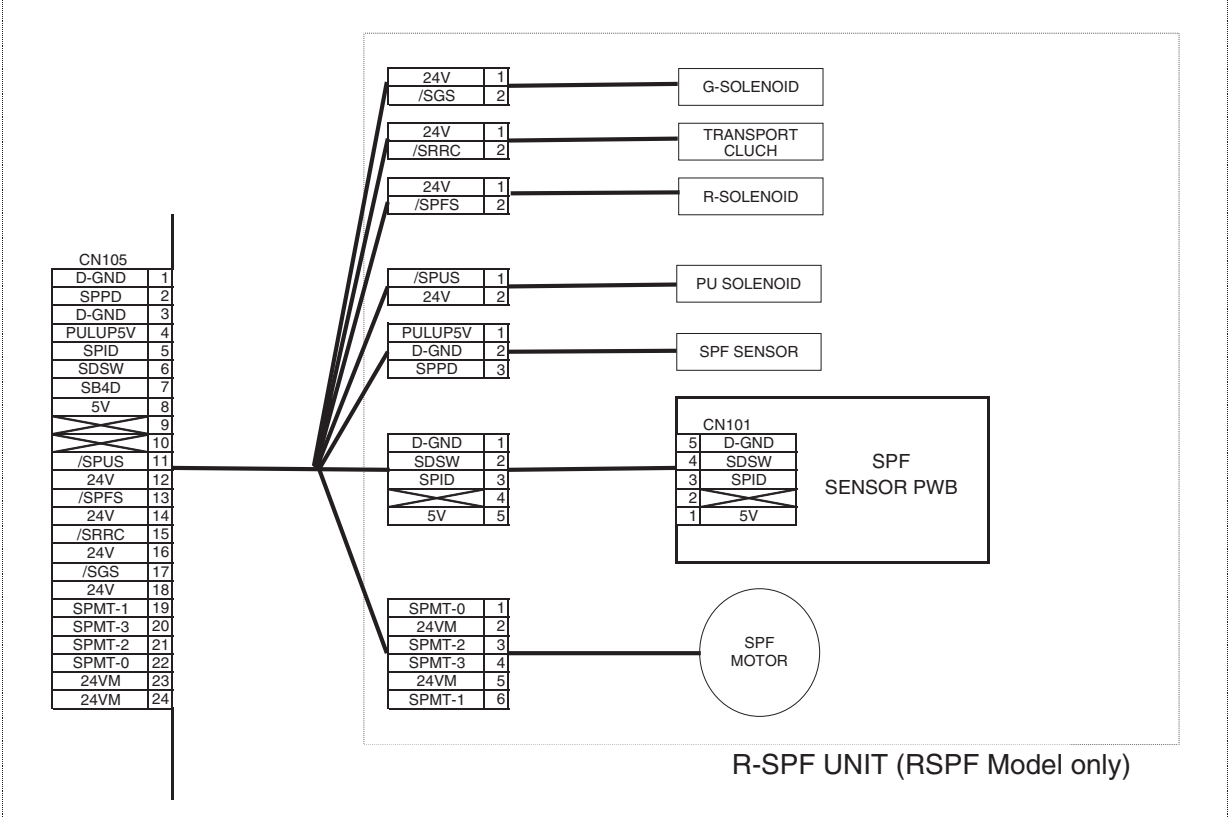


ACTUAL WIRING DIAGRAM 5/7 (SPF, R-SPF UNIT)

D



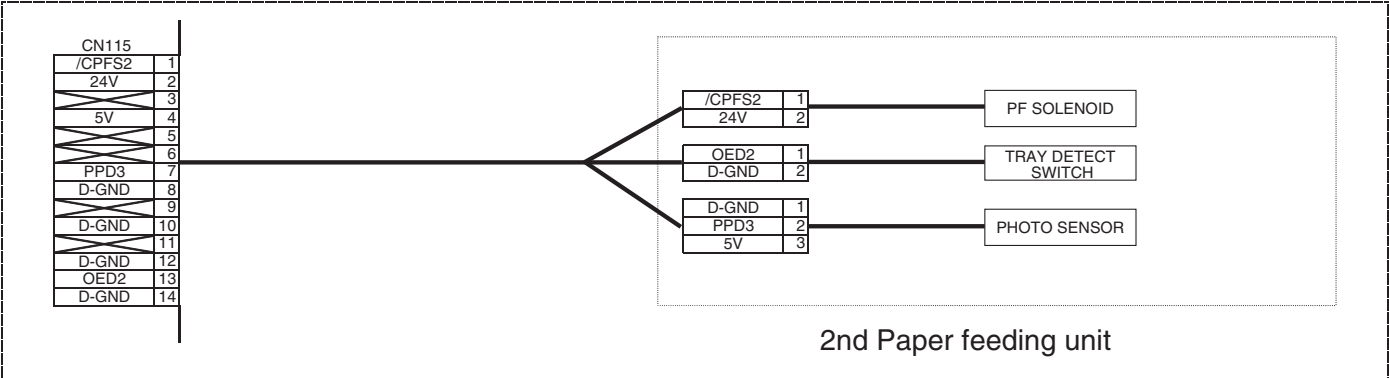
D



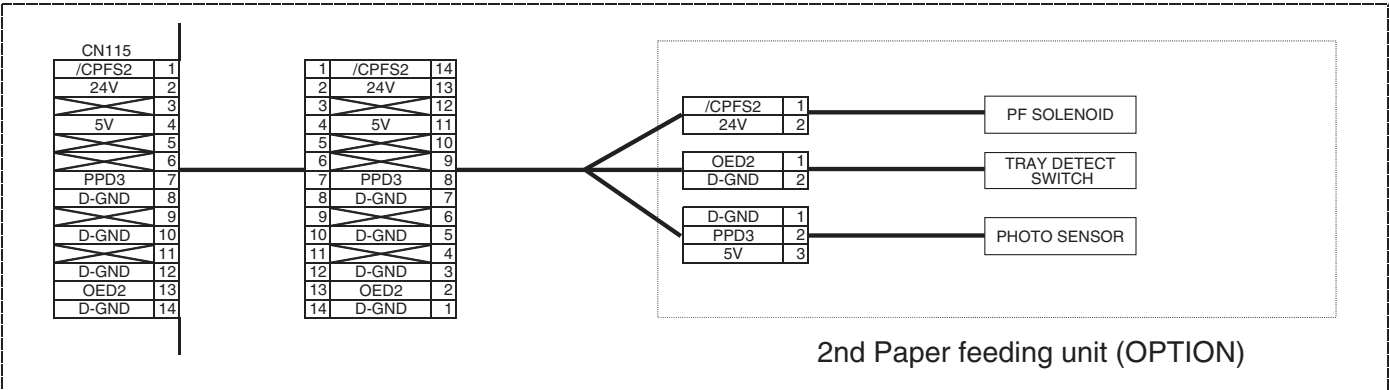
ACTUAL WIRING DIAGRAM 6/7 (2ND PAPER FEEDING UNIT)

(The models with 2ND PAPER FEEDING UNIT attached only.)

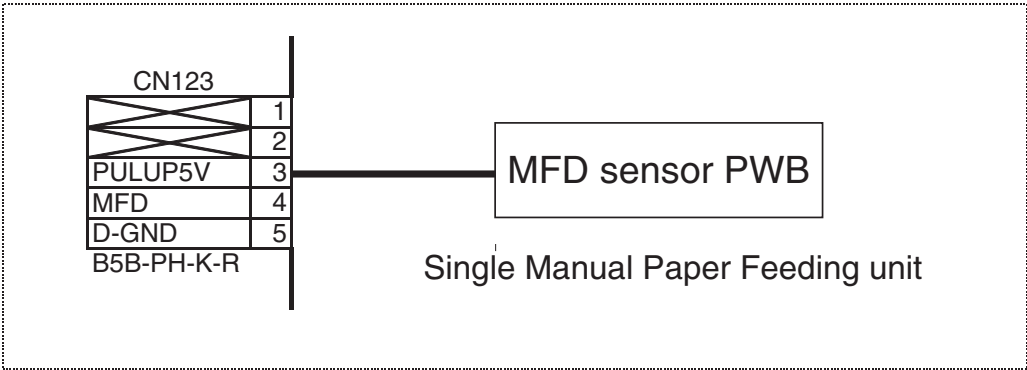
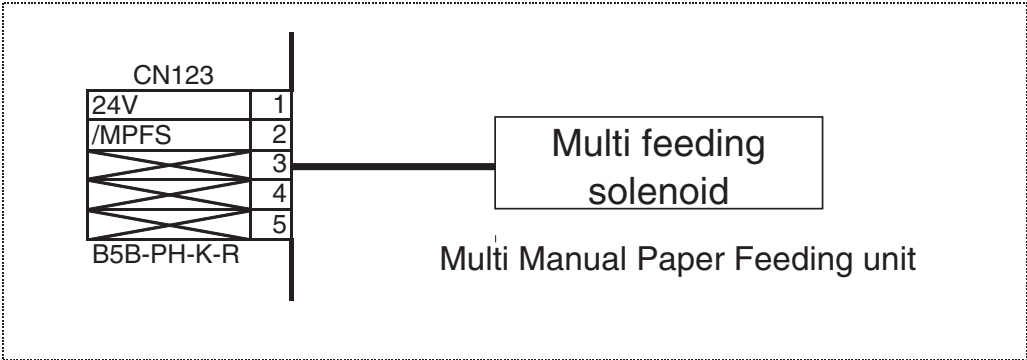
E



E



F



Manual Paper Feeding unit

CAUTION FOR BATTERY REPLACEMENT

- (Danish) ADVARSEL !
Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandoren.
- (English) Caution !
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the manufacturer.
Dispose of used batteries according to manufacturer's instructions.
- (Finnish) VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.
- (French) ATTENTION
Il y a danger d'explosion s' il y a remplacement incorrect
de la batterie. Remplacer uniquement avec une batterie du
même type ou d'un type équivalent recommandé par
le constructeur.
Mettre au rebut les batteries usagées conformément aux
instructions du fabricant.
- (Swedish) VARNING
Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.
- (German) Achtung
Explosionsgefahr bei Verwendung inkorrektter Batterien.
Als Ersatzbatterien dürfen nur Batterien vom gleichen Typ oder
vom Hersteller empfohlene Batterien verwendet werden.
Entsorgung der gebrauchten Batterien nur nach den vom
Hersteller angegebenen Anweisungen.

CAUTION FOR BATTERY DISPOSAL

- (For USA,CANADA)
Contains lithium-ion battery. Must be disposed of properly.
Remove the battery from the product and contact
federal or state environmental
agencies for information on recycling and disposal options.

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